

COMPUTERWORLD

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Cuts in IBM micro prices stir industry speculation

By Peter Bartolik
and Eric Bender
CW Staff

IBM's recent price cuts of up to 23% for its Personal Computer product line may precede a fall announcement of a high-end microcomputer system and were designed to prop up demand for the firm's existing products, according to industry analysts.

Further, analysts and several vendors interviewed last week maintained that the move will likely pressure some vendors of compatible machines out of business.

"The [Personal Computer] is over halfway through the life cycle, and it's been quite some time since the price was cut," noted Chris Christianson, senior analyst with the Yankee Group in Boston.

George Colony, senior analyst with Forrester Research Corp., agreed: "It's somewhat of a mid-life kicker for the product; that product is now three years old." Both analysts said IBM is paving the way for an announcement, within six to nine months, of a system based on the Intel Corp. 80286 microprocessor.

The analysts also agreed with widespread reports of slower growth in demand for microcomputers and said that IBM saw a need to spur demand while increasing its market share at the expense of IBM-compatible vendors. Christianson qualified his evaluation, however, saying, "Demand [for micros] has fallen off, but this is the summer selling season, and that is always slow."

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Bar Association cites growth in DP crime

By Bryan Wilkins
CW Washington Bureau

WASHINGTON, D.C. — In one of the few empirical surveys of computer crime, the American Bar Association recently confirmed the gravity of a situation in which "computer crime is a problem of substantial and growing significance."

The survey results, published in a report by the Computer Task Force of the ABA's Criminal Justice Section, found that over 25% of the respondents had sustained "known and verifiable losses due to computer crime" during the last 12 months. The "Report on Computer Crime" noted that of the 72 firms that reported annual losses, the estimated individual losses ranged from \$145 million to \$730 million annually.

Given the low number of respondents who confirmed losses, the monetary losses stemming from computer crime were probably widely underestimated, the report said.

According to the report, the most common types of crime committed with the aid of a computer are the destruction or alteration of data, the destruction or alteration of software, the theft of software, the theft of raw output of data, the theft of hardware, embezzlement, fraud against consumers and the theft of intangible or tangible assets.

The report was compiled from questionnaires returned by 283 large corporations and government agencies out of a mailing of 1,000. The respondents to the survey were predominantly super-

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Forward movement

Western U.S. banks closer to fully automated, micro-based EFT/19

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The flexible 32-bit workstation/35

TOP OF THE NEWS

Four to 10 times faster than Digital Equipment Corp.'s VAX-11/780 is how Gould, Inc. billed three additions to its Unix-based PN9000 line of superminis. **Page 2.** Meanwhile, DEC kept its year-old promises to both its VAX-11 supermini and Microvax I micro users last week when it brought out Version 4.0 of VMS for the supermini and a subset of the VMS operating system for the microcomputer. **Pages 6-7.**

Coexistence with the IBM Personal Computer is what Wang Laboratories, Inc. promised users of its Professional Computer and its larger systems. Toward that end, the company announced two

products last week. **Page 2.**

Trilogy Ltd. exited the mainframe market before it ever entered it. It will concentrate instead on developing wafer-scale integration. **Page 5.**

Some say yea, some say nay. Representatives of six major software vendors clashed last week on the issue of announcing products before those products are ready for market. **Page 13.**

Artificial intelligence is 'ready for application to serious problems,' a team of Litton Industries, Inc. executives decided, and they're considering 14 differ-

ent projects. **Page 49.**

Apollo Computer, Inc.'s Domain family grew with the addition of a 32-bit color workstation, network file servers and software enhancements. **Page 69.**

If you have to provide word processing capability to your users, should you use a personal computer and one of the new word processing packages? Or will a dedicated word processor do a better job? **Page 79.**

On the rebound: The software and services industry's revenues grew 22% last year. **Page 85.**

PROFILE

Her path into high-tech wound through the Far East

By Robert Batt
CW West Coast Bureau

As manager of automated office systems at Alta Bates Hospital in Berkeley, Calif., Patricia Davis is no slouch when it comes to understanding and coordinating the office of the future.

Her path into the world of high technology was far from ordinary. Davis, whose hobbies include studying Asian art and the Chinese language, has an academic background in Japanese history.

"Office automation came to me as much as I sought it," Davis remarked in a recent interview. "What influenced me was having an interest in methods im-

provement and helping people to do things in a faster, better, smarter and cheaper way."



Davis

three-year plan to place on-line a comprehensive patient care computer system. She is responsible for ensuring the effective implementation of a network of office systems whose applications in-

clude word processing, electronic mail, calendaring, telecommunications, electronic file systems and graphics.

Davis' first project will be to coordinate the myriad mailing lists that the hospital uses and to centralize and automate that function to reduce costs significantly.

"Organizationally, hospitals are fascinating places to work in," Davis remarked. "One of the things that grips me about my work is the whole concept of change and what happens to people when they are forced to adapt to a new technology."

Davis feels that her somewhat esoteric background is valuable when it comes

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NEWS

Gould issues challenge to VAX-11/780

Says Unix-driven PN9000s up to 10 times faster than DEC unit

By David Myers
CW New York Bureau

NEW YORK — Gould, Inc.'s Computer Systems Division topped off its line of Unix-based 32-bit virtual memory processors with three machines said to perform from four to 10 times faster than Digital Equipment Corp.'s VAX-11/780 supermini-computer.

Designated the PN9000, the series of superminicomputers rounds out the line of Unix-driven minis first introduced by Gould in March [CW, March 19]. The series includes a dual-processor version with a CPU and an internal processing unit (IPU) operating in parallel.

All three models of the PN9000 series, ranging in price from \$245,000 to \$385,000, run Gould's Universal Time-Sharing Executive (UTX)/32 operating system. The operating system incorporates features of the University of California at Berkeley Version 4.2 of Unix and AT&T's Unix System V, the company said.

Gould said it expects to aim the series at users in computer-aided design and engineering, engineering administration, software development, data base, back-end processing and management support applications.

Positioned in direct opposition to DEC's VAX-11/780 supermini, the entry-level Gould system, called the PN9005, includes Emitter Coupled Logic chip technology, 32K bytes of cache memory, a four-state instruction pipeline architecture and 4M

bytes of main memory.

The second version of the supermini, named the PN9050, is basically the same as the entry-level model, but includes an extra chassis. This is provided for users who want eventually to add an IPU, Gould said.

The dual-processor model, called the PN9080, includes 64K bytes of cache memory in each processor, for a total cache capacity of 128K bytes. It features 16M bytes of main memory, according to the vendor.

The cache memory included in the two smaller versions of the Gould supermini can be boosted by the addition of a 32K-byte memory module. This lifts the cache capacity in those systems to a total of 64K bytes, a spokesman said.

Measuring a little over 4½ ft high by nearly 6 ft, the Gould system is built around a high-speed synchronous bus with a 26.67M-byte/sec transfer rate.

Gould claimed a basic PN9005 processor offers four times the performance of DEC's VAX-11/780 processor. The PN9080 configuration, which includes the IPU and two multiply accelerators, is said to offer 10 times the performance of the VAX-11/780. Gould said the performance comparisons are based on benchmark tests.

Other system features include an integral floating-point accelerator, base register support and an optional Multiply Accelerator, according to Gould.

Gould said the PN9000's hierarchical memory system makes it possible to provide data to the CPU at access rates of about 75 nsec per 32-bit word. The CPU can also perform cached register-to-register instructions in a cycle measuring 75 nsec, Gould added.

A Gould spokesman said the PN9000 system provides the capability to interleave main memory in order to distribute sequential addresses into independently operating memory modules.

The UTX/32 supports virtual memory management, business applications and data base software, according to Gould.

In addition, the three models of the supermini can be fitted with Xerox Corp.'s Ethernet, RS-232 and high-speed parallel port communication links, Gould said.

Availability is four months after placement of an order.

The PN9000 is priced at \$245,000; the PN9050 at \$285,000; and the PN9080 at \$385,000.

Gould's Computer Systems Division is located at 6901 W. Sunrise Blvd., Fort Lauderdale, Fla. 33310.

Wang micros now run with IBM micros

By Eric Bender
CW Staff

LOWELL, Mass. — Wang Laboratories, Inc. last week announced two products that it said "make the IBM Personal Computer coexist with the Wang Professional Computer."

The company unveiled the Wang/IBM Emulation Control Board, which reportedly emulates the IBM Personal Computer monochrome card and permits the Wang Professional to accept off-the-shelf IBM software that runs in monochrome text mode, according to the spokesman for the company.

"Most popular programs will run without modification," typically operating twice as fast as on the IBM machine, said Ken Sullivan, director for Professional Computer product marketing at Wang.

The product, with associated software and key caps, will be available in September for \$595, according to Sullivan.

Second product

The second product announced was a Wang System Network option for the IBM Personal Computer. It provides the company's customers who have IBM microcomputers with a way to get into Wang environments. The lack of such access "has become a significant problem," Sullivan said.

The option, with a communications board and associated software, permits IBM Personal Computers to connect to Wang VS systems and participate in Wang networking.

The IBM system can either attach as a VS data processing workstation or transfer files to and from the VS, with files downloaded by a VS print facility, Wang said.

The package is scheduled to be available in the second quarter of 1985 for \$1,850.

In addition to those two products, Wang announced a 30M-byte hard disk drive for the Professional and the PIC, the Professional Image Computer. It will be available next month for \$3,995.

A new 12-in. color monitor with 640- by 250-pixel resolution will be offered for \$800 in September. The monitor requires a color monitor board, which will carry a \$400 price tag.

Other Professional products

Other new products for the Professional line, available next month, include a wide-carriage, dot-matrix printer selling for \$995; an enhanced version of Microsoft, Inc.'s Multiplan spreadsheet package selling for \$195; an upgraded asynchronous communications package priced at \$100; and a Wang 2200 support facility for Professional Basic programs selling for \$125.

The company also said it will bundle a new installation utility and a new on-line tutor facility for novice users, with system shipments beginning next month.

More information on last week's announcements is available from Wang, One Industrial Ave., Lowell, Mass. 01851.

NEWS SUMMARY

Trilogy Ltd. has discontinued its development of a large-scale, IBM-compatible computer based on wafer-scale integrated circuits/5

Digital Equipment Corp. last week released Version 4.0 of its VMS operating system, which gives enhanced clustering and security capabilities to the VAX-11, as well as several software packages for that line of superminicomputers. In addition, the company announced for its Microvax I a subset of VMS that comes without the clustering capability/6-7

CW at Info/Software: Like never before, the tools are now in place for companies to begin using information as a strategic weapon, a consultant said . . . Software vendor representatives clashed on the issue of preannouncing products . . . The information center can profit from direct end-user involvement, a user said, advising that information centers be treated as separate profit centers/12-14

CW at AMS: Options are available for companies facing manufacturing systems obsolescence/15

Visicorp enhanced its Vision integrated software and announced a floppy-based version/16

The imposition of substantially higher rates for private-line services has been delayed by the Federal Communications Commission for up to five months/17

The finalists in this year's National Basketball Association championship series were also league leaders in the use of computer technology/18

Two Western U.S. banks took steps moving them closer to fully automated, microcomputer-based electronic funds transfer/19

Stress in the DP Shop (Part 2): Watch for signs of stress that threaten your DP site/20

The development of point-of-sale systems will affect the nature of the MIS function, a recent survey reported/21

The head of the Internal Revenue Service recently appeared before a congressional panel to defend the agency's use of commercial mailing lists in an experimental computer matching program designed to catch citizens who fail to file tax returns/24

CW at Impact-DC: While it is clear that computers have changed society, a Harvard sociologist told Wang Laboratories, Inc. users that there

are more changes to come . . . Realizing OA benefits requires a work redistribution, a speaker said . . . A trio of satisfied multivendor users addressed the meet/26-27

The U.S. government recently held a workshop to stress the need for independent agencies and its own officials to adopt security measures/28

Volunteers are supplying on-line information in an effort to forecast weather trends/28

France is eager to increase its robot exports to the U.S./30

Computer-garnered health data, rather than lengthy visits to clinics, is keeping Soviet workers productive/33

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NEWS

CRIME from page 1

visors and executives with direct or indirect responsibility for computers and their use at the managers' place of employment. Forty-eight percent represented large corporations with annual gross revenues exceeding \$1 billion.

Noting the rapid proliferation of personal computers in society and the increasing growth of younger people with computing knowledge, the task force's report called for the enactment of a federal computer crime law, wherein infractions such as penetrations of hospital and governmental data bases, for example, are distinguished from lesser infractions.

"This proliferation of machines and knowledgeable users, along with recent concrete examples of the damage that can be caused by one person with one personal computer, provides disturbing and undeniable evidence that the scope and significance of computer crime, and its potentially devastating effects, are broad and deep," the report stated.

"The survey results reveal that computer crime generally is viewed to be of equal or greater importance than many other types of white-collar crime and is seen as being more important than a number of other crime problems (shoplifting, illegal immigration and illegal possession of firearms, for example)," the document added.

The survey also found that:

■ Three-quarters of the respondents believe that the major responsibility for controlling computer crime rests with private industry and individual users.

■ The respondents, by a large margin, believe "the most effective means of preventing and deferring computer crime" is "more comprehensive and effective self-protection by private business."

■ Top management of corporations and institutions dependent on computers underestimates the potential magnitude and the probability of the various types of computer crime that can occur.

■ A gap between general computer technology and computer security technology is growing.

■ There is an emphasis on developing a genera-

tion of young computer users who are challenged to use computers to the ultimate extent possible, with little or no regard for other people's property or privacy.

■ An effective federal and state ability to prosecute computer crime is lacking.

■ Private industry and public law officials lack the expertise to investigate computer crime.

One other highlight of the report confirmed that most perpetrators of computer crimes are individuals within the company or organization, who are disciplined in some fashion when they are caught, but whose crimes are not reported to the authorities.

The report noted that none of the federal agencies with acknowledged losses due to computer crime chose to participate in the survey. "If the annual losses attributable to computer crime sustained by the relatively small survey group are, conservatively estimated, in the range of half a billion dollars, then it takes little imagination to realize the magnitude of the annual losses sustained on a nationwide basis," the report observed.

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to dealing with the hectic world of office technology. It affords her, she claimed, a certain detachment from the day-to-day process of problem solving, a detachment without which one can take things too seriously.

Ability to step back

"When things go a little haywire, I think I am able to step back from my individual project or process and see it from an historical point of view. For example," she explained, "I'm consoled by thinking back on what I know about the Chinese bureaucracy. Over thousands of years, the Chinese had bureaucrats running around frantically to check the records and make sure people paid their taxes on time. Now, who cares about what they did?"

"That gives me a kind of perspective on this work, particularly when the software is not operating or the hardware is breaking down."

With a master's degree in her field and a husband who holds a doctorate in Japanese medieval history, Davis spent many years traveling around the Far East. "The problem was that with our bizarre backgrounds, when we returned to the U.S., we found ourselves unemployable, since you practically have to wait for someone to die to take an academic job in Japanese history," she noted. "My main advantage was that I could type."

'By sheer force of numbers, the opportunities for women to take on management responsibilities in office automation will inevitably increase.'

— Patricia Davis, OA manager, Alta Bates Hospital.

Davis took a job as a secretary at Alta Bates. Before long, however, her colleagues, recognizing a keen analytical mind, began to involve her in projects designed to improve office productivity.

"By working with management [industrial] engineers, I got a taste of organizational research methods and received an education in understanding information flows. However, since I had no background in the subject, they could hardly call me an engineer, and so I was given the title of 'Management Engineering Project Assistant,'" she recalled.

Davis then began what she called an intensive process of self-education. She became an avid reader on topics connected with her new pursuit and a regular attendee at office technology seminars.

"It became obvious to me that this work is where the action is and will continue to be over the next 10 to 15 years as traditional data processing, the developments in microcomputers and the integration of systems all converge and focus on offices and what they do," she said.

Indeed, as far as Davis is con-

cerned, the learning process has just begun and will never be finished. "In an area that is changing almost week to week, it is very important to keep up with what is happening and commit yourself to a process of career-long, continuing education. Unlike Japanese history, which is now basically known, when it comes to office systems, I will never be able to say, 'Yes, I've mastered this. I know as much as I will ever know.'"

Possibilities galore

Davis believes the automation rev-

olution now under way in the office will open up a whole new vista of possibilities for people like herself, who have received no formal training in data processing or telecommunications. It opens up opportunities for would-be specialists to spring up from the user community.

"This will apply in particular to women because offices are so heavily staffed by females. By sheer force of numbers, the opportunities for women to take on management responsibilities in office automation will inevitably increase."

Her own future? "I feel that I am at the beginning of something. ... I would like to combine my experiences in Asian studies and office automation, and, along the way, I believe an opportunity will present itself to bring those two halves of my life back together again."

AWC conference to precede NCC

LAS VEGAS — The Third Annual National Conference of the Association for Women in Computing (AWC) will be held here on July 8.

This year's event will be keynoted by Dr. Ruth Davis, president of a science and technology consulting firm called the Pymatuning Group, Inc.

Prior to founding her own company, Davis served as Assistant Secretary of Energy for Resource Applications from 1979 to 1981.

The theme of this year's AWC conference is "Choice or Chance in Computing Careers."

Registration for the one-day conference, which will be held the day before the National Computer Conference opens here, is \$40 for AWC members and \$50 for nonmembers. Further details may be obtained from Patricia Timpanaro, AWC Conference Registration, No. 206, 40 Main St., Stoneham, Mass. 02180.

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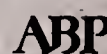
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NEWS

Trilogy kills plan to get into the mainframe business

By Peter Bartolik
and Robert Batt
CW Staff

CUPERTINO, Calif. — Trilogy Ltd. last week discontinued its attempt to develop a large-scale, IBM-compatible computer based on wafer-scale integrated circuits. The company indicated that it will instead attempt to find alternative ways to exploit the wafer-scale integration it has been developing.

In a terse statement released last Monday, the company said the termination was a result of a comprehensive review of the project and "the anticipated competition in the computer marketplace."

Thomas Lerone, Trilogy vice-president and treasurer, told *Computerworld* the company did not want to expand on the announcement and its future plans, pending discussions with the three companies that have invested a total of \$77 million in the company — Digital Equipment Corp., Sperry Corp. and CII-Honeywell Bull of France. However, Lerone did say the decision involved several factors: "technology, financial and the anticipation of the technical environment, which is probably key."

Considering smaller systems

Trilogy Chairman Gene Amdahl told shareholders on Thursday that manpower will be reduced by 20%. He added, "We will be looking at various alternative applications of [wafer-scale integration] technology, including its use in smaller computer systems."

Speculation among industry observers was that the company had exhausted all sources of funding.

Thomas Crotty, an analyst with the Gartner Group of Stamford, Conn., said, "I would guess they were unable to raise the additional \$100 million to \$200 million they needed to tide them over the development schedule before they started to raise revenues." Lerone would only say, "I don't want to say [raising additional funds] was not feasible."

Founded in 1981, Trilogy sparked much industry interest and raised large amounts of capital based mainly on the reputations of its founders: Gene Amdahl, who left IBM in 1970 after 14 years as a top mainframe developer there to form Amdahl Corp. and design a plug-compatible computer; and his son Carlton, formerly a principal with computer manufacturer Magnuson Computer Systems, Inc.

With that team and the goal of leapfrogging IBM with the wafer-scale technology, the company first raised \$85 million in venture capital, then obtained an additional \$55 million through the sale of limited partnerships in Trilogy Computer Development Partnership Ltd. and sold stock and licenses to CII-Honeywell Bull for \$13 million, Sperry for \$42 million and DEC for \$26 million.

But the company's plans hit several snags early this year. Its computer project suffered multiple schedule revisions as a result of redesigning its semiconductor and later switching plans to make a dyadic, or dual processor machine based on a simplified wafer. In April, Carlton Amdahl announced he was stepping down as vice-chairman, and a director of the company and new people were consequently brought in to head the com-

puter project.

Wall Street "had been anticipating this [cancellation] ever since," according to Jonathan Fram, a mainframe industry analyst with Paine Webber Mitchell Hutchins. Trilogy stock, issued at \$12 per share, has since traded at the \$3 level.

The company's future direction is believed to hinge on negotiations with the large investors. At Sperry, spokesman Bernie Madden said, "We don't like to see a competitor change his mind, but as far as Sperry's interest in Trilogy, we don't see that as a loss at all."

He said Sperry still looks to wafer-scale integration and Trilogy's computer-aided design techniques to de-

velop a follow-up to Sperry's 1100/90 mainframe and will continue to work with Trilogy.

Industry analysts were less positive.

Howard Hagen, director of computer industry service at Dataquest, Inc., a San Jose, Calif.-based market research firm, wondered, "If the technology wasn't going to be good enough for Trilogy's mainframe for several years to come, why should it be good enough for other company's mainframes?"

Greg Kelsey, senior technical analyst at Hambrecht & Quist, a San Francisco-based investment firm, noted that "a critical factor will be how much leverage Trilogy has over

the other companies that have invested in their semiconductor technology. For example, an important question is how much of Trilogy's technology and design automation do the other companies already have legal rights to? This will influence Trilogy's room for maneuver."

Those companies, according to Crotty of the Gartner Group, "got what they wanted" in the computerized design and marketing tools developed by Trilogy. But Trilogy, in addition to marketing semiconductors based on wafer-scale integration, might also "become a development shop and do custom development for other people," Crotty noted.

System Accounting in VM

Who Has Their Hands in Your Information Center?

Just six months ago, you told your executive committee that the proposed computer system for your Information Center would meet the corporation's needs for two years. Now it seems the system will be saturated in the next two months. Your chief executive wants to know why.

Your staff is able to identify individual users, but cannot track each user's resource consumption. You cannot identify where the overrun is.

System accounting in a VM interactive environment inherently demands a different approach than you may expect. VM just doesn't provide the raw accounting data offered by other systems. Still, you need to account for system and resource usage in your VM Information Center.

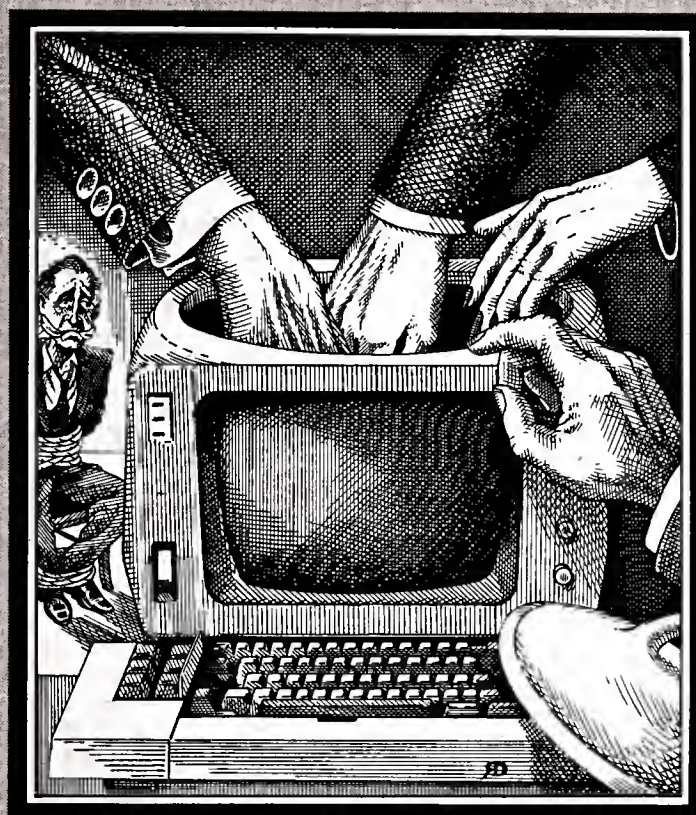
PERSPECTIVE

Many MIS and DP executives began their careers in the MVS environment, and consequently view system software product evaluations from an MVS perspective. A VM based Information Center though, simply does not fit into the MVS world. That is not to say that VM is inherently better; it's just very different.

HISTORY

MVS has been a strategic product for IBM since at least the early 1970s. This strategic "label" caused IBM to devote substantial development resources, over a long period, to enhancing MVS and all of its component parts. The success of this long term effort shows today. MVS is a robust, full featured, reliable, and stable batch operating environment. But as an interactive support environment, it is seriously deficient in terms of productivity and end-user friendliness.

This deficiency created the need for VM. The explosive growth in the number of VM sites is largely due to VM's clear superiority over MVS as an interactive decision support environment. As the Information Center and Development Center concepts grew in popularity, IBM labeled VM as a "highly strategic" product and began to devote extensive development resources to enhancing the product. IBM's VM



development team is moving aggressively to close the enhancement gap between MVS and VM.

SYSTEM ACCOUNTING

A good example of the difference in relative sophistication of features between MVS and VM internals is in system accounting.

MVS allows you to collect over 200 different types of records from the Systems Management Facility (SMF) and the Resource Management Facility (RMF). Independent software vendors have created products that allow this SMF and RMF data to be summarized and reported in a myriad of useful ways. The key to this success is that MVS itself offers native realtime collection and management of these records in the SYS1.MAN data sets.

VM in contrast produces only six basic accounting records. Many more are required before system accounting in VM will reach the level of sophistication enjoyed by MVS. No software vendor can build a VM accounting product as complete and strong as the existing MVS products because the raw data just isn't available in VM. Many enhancements to MVS accounting came as a result of pressure from

IBM user groups. These groups are placing similar pressure now on IBM to enhance VM accounting. VM will evolve substantially, but you need resource accounting now.

YOUR ACCOUNTING NEEDS

What is important to the MIS or DP manager in an interactive decision support environment? The accounting demands of MVS and VM system accounting are externally similar, but with significant internal differences. The needs are the same, but the implementations are different.

Let's look at your needs from an overall management perspective. First, if you are running an Information Center under VM, you don't have the control over resource consumption that you would under MVS, nor do you have the predictability of the timing of resource demand. Other departments can consume huge portions of your resources without notice, and worse, without accountability.

Next, you may be forced to fund large software purchases for another department with no way to recoup the cost or even determine whether the acquired software product is being used.

Similar problems exist in project accounting. You must be able to track expenditures to budget and enforce budget controls by project.

To be accurate in a VM environment, this data must be collected realtime. Batch accounting is sufficient for a batch environment, but for pure interactive work, only realtime accounting is timely enough.

Of course you also require the ability to do the traditional system accounting functions of invoicing, management reporting, auditing, and security enforcement.

WHAT IS YOUR SOLUTION?

The senior developers at VM Software Inc. have the experience to force an accounting system to meet these needs through extensive modifications to VM internals; but this would be a serious mistake. IBM is moving so aggressively to enhance VM that there is no way to ensure that internal modifications to VM made by an independent software vendor today will operate on the next VM release. This is an assurance you must have before you acquire any software package. An effective VM accounting system must work within the existing framework of the VM environment, yet allow for future VM growth.

We at VM Software Inc. have developed six products that work together to help you run your VM Information Center more efficiently. VMACCOUNT meets the resource accounting needs discussed above. Perhaps more importantly, VMACCOUNT is specifically designed to grow in sophistication as IBM enhances VM to collect and report more detailed data on system usage. VMSI, as the leading vendor of VM system software products, understands the intricacies of VM and the needs of VM Information Centers. VMACCOUNT is designed to meet these needs, now and in the future.

VM
Software Inc.

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NEWS

DEC updates VMS for supermini, adds micro version

By Tom Henkel
CW Staff

MAYNARD, Mass. — Digital Equipment Corp. last week announced Version 4.0 of its VMS operating system for the VAX-11 superminicomputer and unveiled a subset of VMS for the Microvax I microcomputer. The announcements fulfilled two promises that DEC had made nearly a year ago to users of its VAX-11 and Microvax I systems.

The company also introduced a series of software offerings for the VAX line. Highlights of last week's announcement include:

- Enhancements to VMS that offer additional clustering and security capabilities for VAX-11 users.

- MicroVMS, a series of modular components of the VMS operating system which give Microvax I users almost all the capabilities available under Version 4.0 of VMS. However, the clustering capabilities available with Version 4.0 are not available on MicroVMS. *Story on page 7.*

- A terminal server that allows users to connect terminals to Vaxcluster multiprocessor configurations via an Ethernet local-area network. At the same time, DEC unveiled a software package, LAT-11, which allows users to dedicate a PDP-11 minicomputer to perform terminal server functions. *Story below.*

- A DEC-developed version of Lisp that conforms to the Common Lisp standard of that artificial intelligence programming language. *Story on page 7.*

- An enhanced VAX Fortran compiler that is said to improve the runtime performance of Fortran programs as much as 50%. *Story below.*

- Additional Phase IV Decnet networking soft-

ware that extends the number of computational nodes that can be configured in a VAX environment. *Story below.*

- A graphics software package, called the VAX Graphical Kernel System, which can be used to create graphics images that conform to both Ansi and International Standards Organization graphics standards. *Story below.*

Version 4.0 of VMS extends the capabilities of multiprocessor configurations of the VAX, which DEC calls the Vaxcluster.

Features available under Version 4.0 include a distributed file system that manages all the files in a Vaxcluster as a single entity; a distributed lock manager that synchronizes resources across the Vaxcluster; and terminal server support, which is said to enable terminals to be more flexibly connected to a Vaxcluster configuration. The terminal server support also offers load balancing and high-availability features, according to Marion Dancy, DEC's manager of VAX System Software Marketing.

Version 4.0 allows a user to manage an entire Vaxcluster configuration through a cluster operator support feature. A mass storage control protocol server allows locally connected disk drives to be accessible from anywhere in the cluster. An enhanced job controller provides clusterwide balancing of a number of jobs per system, DEC said.

Security features added to Version 4.0 include extended password and login limits that allow the systems manager to control, manage, restrict and monitor access to the system. In addition, the ability to use access control lists has been expanded to offer the ability to define data access more selectively.

Other enhancements include extensions to the Digital Command Language, the user interface that allows special prompts, command recall and editing capabilities. The operator interface has also been altered to allow different operator classes to be defined. This, DEC said, gives the user greater flexibility when managing batch and print queues.

Lastly, a variety of utility enhancements were included in Version 4.0. These include newly added native mode utilities that replace a series of PDP-11-compatible utilities used on earlier releases, a screen-oriented symbolic debugger and an enhanced sort capability.

By adding the native mode capabilities, DEC has removed a series of features within VMS which formerly gave users compatibility with PDP-11 series minicomputers. Those compatibility features are now being offered as a separate product, called VAX-11 RSX. The product simulates the RSX-11M and the 11M-Plus operating system environments and costs \$2,000 for a single license and \$1,200 for a Vaxcluster license. A kit that includes manuals and other documentation costs \$840 to \$1,340.

Version 4.0 of VMS will be available this fall. For VMS users operating under current software warranties and those with current DEC VMS software maintenance agreements, Version 4.0 is being offered as a no-charge upgrade.

On new systems purchases, the cost of the systems software is traditionally bundled with purchase price. However, a spokesman said a license price for Version 4.0 is roughly \$10,000.

More information on last week's announcements is available from DEC, 146 Main St., Maynard, Mass. 01754.

Terminal switch extends Vaxcluster communications

MAYNARD, Mass. — Digital Equipment Corp. last week extended the communications capabilities available under its Vaxcluster multiprocessor configurations by adding a hardware terminal switch said to allow users to connect multiple terminals to a Vaxcluster via the Ethernet local-area network.

At the same time, DEC announced a software package, LAT-11, that allows users to adapt a PDP-11 minicomputer to perform the same basic functions as the newly announced terminal server.

Both products provide users with the means to connect multiple terminals in configurations that are independent of specific processing

units. This ability, DEC said, gives users more flexible access to data, program development capabilities and applications.

The products also provide high reliability features, DEC claimed, allowing users to continue using an application if the CPU executing the application goes out of service.

The terminal server provides support for a variety of the vendor's terminals and microcomputers. It enables each user to access one or more host processors from a single attached terminal.

The terminal server is a special-purpose hardware package which can support up to 32 terminals. Because it offloads virtual terminal

processing on host nodes, the terminal server enables the host processors in a local-area network to dedicate more CPU cycles to applications processing.

In addition, its use in an Ethernet environment enables users to access all services and host processors on the network. This, DEC said, aids in distributing system resources.

The 32-line version of the terminal server costs \$20,000. A 16-line version costs \$14,000. Software for the units costs \$500.

LAT-11 is a special-purpose software package that allows a Unibus-based PDP-11 minicomputer to be used as a terminal server. A PDP-11 can support as many as 64 termi-

nals at data rates ranging from 110 to 9,600 bit/sec. The package costs \$3,000 and will be available this summer, DEC said.

To support both products, DEC announced a local-area transport protocol that enables both the terminal switch and LAT-11-equipped PDP-11s to operate with a Vaxcluster or in an Ethernet environment. The LAT protocol is standard in DEC's recently announced Version 4.0 of its VMS operating system.

The vendor said the protocol can also be incorporated into Version 3.6 of VMS.

More information is available from DEC at 146 Main St., Maynard, Mass. 01754.

Enhanced compiler among other software unveiled for VAX

MAYNARD, Mass. — In addition to operating system enhancements for its VAX-11 and Microvax I processors, Digital Equipment Corp. last week announced three other software enhancements for the VAX-11 superminicomputers.

Among them was an enhanced version of its Fortran compiler, which DEC said improves runtime performance by 10% to 50%. VAX Fortran Version 4.0 conforms to the Ansi's Fortran X3.9-1978.

Features of the updated compiler include the ability to optimize source programs globally while taking advantage of the VAX processor's floating point and character string instruction sets. The compiler can also make use of the VAX/VMS operating system's virtual memory capabilities, DEC said.

The compiler costs \$4,700 for a single license

and will be available this fall.

Also announced were enhancements to the Decnet-VAX Phase IV networking software. Available in versions for the VAX and Microvax I, Version 4.0 of the software incorporates an extension to the routing algorithm. This allows development of VAX-based networks incorporating multiples of the previous 1,023 processor limit.

Security enhancements include a proxy login feature that enables a network user at one host to sign into another host on the same network without sending passwords in clear text.

For the VAX environment, the package costs \$950 and will be available along with Version 4.0 of the VMS operating system. The Decnet package for the Microvax I family costs \$490.

Finally, the company announced the VAX Graphical Kernel System/0B (VAX GKS/0B), a

subroutine library for VAX/VMS which implements the International Standards Organization and Ansi GKS standards for two-dimensional, device-independent graphics. The package conforms to level 0B of the GKS standard, which provides direct output and synchronous input capabilities.

The first release of VAX GKS/0B provides support for DEC VT125, VT240 and VT241 raster graphics terminals and the Tektronix, Inc. 4014 direct view storage terminal. The subroutine supports DEC's LA100, LA50 and LA34 hard-copy devices. It also supports Tektronix's 4611 hard-copy unit when attached to a Tektronix 4014 display terminal.

VAX GKS/0B costs \$2,000 and is immediately available, DEC said, from 146 Main St., Maynard, Mass. 01754.

NEWS

Micro VMS mimics VMS, but lacks clustering ability

MAYNARD, Mass. — The Micro VMS operating system announced last week by Digital Equipment Corp. for its Microvax I family of microcomputers is a prepackaged version of DEC's VMS Version 4.0. The major difference between the two, DEC said, is that Micro VMS does not support the clustering capabilities available under VMS.

Micro VMS is available in several modules, which a spokeswoman said can be configured to suit a Microvax I user's specific needs. Native, user-mode applications programs written for the VAX processors will run without change on Micro VMS, but that general rule is subject to adequate peripheral support on the Microvax I, she noted.

Moreover, user-written system services or drivers for VAX/VMS may require alterations to accommodate the Microvax hardware, DEC added.

Scheduled for September availability, Micro VMS features include the same basic operations provided with VAX/VMS. These include backup, copy, rename, delete and edit. Programming aids include VMS macro and object libraries, assembler, de-

bugger and system programming utilities.

Micro VMS supports DEC's RX50 5¼-in. diskette drive, DEC's 10M-byte 5¼-in. RD51 Winchester disk drive and larger disk units. It requires a minimum of 1M byte of main memory.

Micro VMS is available in several modules or kits. The base kit includes the minimal components to install and execute applications, a series of common utilities and a security module that includes security classifications, system accounting functions, disk quotas and print and batch queues. That kit, which includes documentation, costs \$500; users must also pay a one-time \$500 license fee.

For those who want to use the Microvax I in a development mode, DEC is offering the base kit plus a development module. The development module includes a series of program development tools that include a linker, debugger, libraries, message utility and a file utility.

The base plus development kit is available for a one-time \$1,500 license fee plus \$900 for the kit. Users of the base kit can upgrade to the development environment by adding a development upgrade, which consists of the program development tools and system programming features. The upgrade kit costs \$1,200 for a one-time license fee and \$600 for the kit.

Lastly, users who need compatibility with the Decnet networking environment can add software that allows the Microvax I to be used as a networking node to transfer information between systems.

The networking systems software is available in two versions. The full-function kit, which gives the Microvax I the ability to act as a pass-through networking device, costs \$500 plus \$1,450 for a one-time license fee. An end-node package, available for a one-time license fee of \$490 and a \$500 kit fee, does not offer the pass-through capability.

More information is available from DEC, 146 Main St., Maynard, Mass. 01754.

DEC puts Lisp on supermini

MAYNARD, Mass. — Claiming to be the first major computer vendor to offer a fully supported artificial intelligence product, Digital Equipment Corp. last week announced a version of the Lisp programming language for its VAX-11 superminicomputers.

Developed to manipulate symbolic data as well as perform numeric computations, VAX Lisp was designed by DEC to conform to the multivendor Common Lisp dialect of the language. The language can be used to develop programs that represent real-world objects, properties or relationships between objects, DEC said.

Features include user-accessible interpreter and compiler modes, dynamic linking of compiled and interpreted code, lexically scoped variables, a user-extensible editor written in VAX Lisp that includes multiple windowing capabilities, integrated debugging facilities and a user-controllable utility that can enhance printer readability.

VAX Lisp also includes a facility that allows the user to call routines written in any other language in the VAX/VMS environment. This, according to Marion Dancy, manager of VAX system software marketing, allows users to integrate artificial intelligence programs into other VAX software.

VAX Lisp will run on a VAX-11 configured with at least 512K bytes of main memory per simultaneous user. Users can run the package on existing systems and possibly avoid buying a Lisp-specific processor, a spokesman said.

A single license for VAX Lisp, which is scheduled to be available this summer, costs \$8,000.

More information is available from DEC, 146 Main St., Maynard, Mass. 01754.

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SAMPLE OF FATS REPORT

| FAST ANALYSIS OF TAPE SURFACES DETAIL REPORT -- FATS VER 4.0 Z | | | | | | | | | | -- INNOVATION DATA PROCESSING | | DATE 1 |
|--|-------|-----|--------|--------|------|---------|---------|----------|--------|-------------------------------|-----------------|--------|
| MESSAGE | ID | UCB | LABEL | OPTION | PASS | FILE NO | RECORDS | LOCATION | LENGTH | RETRIES | ACTION | PAGE |
| FATS204 | TAPE2 | 281 | 987654 | | | | | 1607 FT | 4 IN | 10 | PERM DATA CHECK | |
| FATS204 | TAPE2 | 281 | 987654 | | | | | 1607 FT | 8 IN | 10 | PERM DATA CHECK | |
| FATS204 | TAPE2 | 281 | 987654 | | | | | 1608 FT | 13 IN | 10 | PERM DATA CHECK | |
| FATS204 | TAPE2 | 281 | 987654 | | | | | 1608 FT | 17 IN | 10 | PERM DATA CHECK | |
| FATS204 | TAPE2 | 281 | 987654 | | | | | 1608 FT | 21 IN | 10 | PERM DATA CHECK | |
| FATS204 | TAPE2 | 281 | 987654 | | | | | 1609 FT | 26 IN | 10 | PERM DATA CHECK | |
| FATS204 | TAPE2 | 281 | 987654 | | | | | 1609 FT | 30 IN | 10 | PERM DATA CHECK | |
| FATS204 | TAPE2 | 281 | 987654 | | | | | 1609 FT | 34 IN | 10 | PERM DATA CHECK | |
| FATS204 | TAPE2 | 281 | 987654 | | | | | 1610 FT | 39 IN | 10 | PERM DATA CHECK | |
| FATS204 | TAPE2 | 281 | 987654 | | | | | 1610 FT | 43 IN | 10 | PERM DATA CHECK | |

The length of these bad spots would cause unrecoverable data checks and I/O errors during processing.

| FAST ANALYSIS OF TAPE SURFACES DETAIL REPORT -- FATS VER 4.0 Z | | | | | | | | | | -- INNOVATION DATA PROCESSING | | DATE 0 |
|--|-------|-----|--------|--------|------|---------|---------|----------|--------|-------------------------------|-----------------|--------|
| MESSAGE | ID | UCB | LABEL | OPTION | PASS | FILE NO | RECORDS | LOCATION | LENGTH | RETRIES | ACTION | PAGE |
| FATS107 | TAPE1 | 280 | 123456 | | | | | 1 FT | | 01 | LABEL WRITTEN | |
| FATS204 | TAPE1 | 280 | 123456 | | | | | 1 FT | | 01 | TEMP DATA CHECK | |
| FATS204 | TAPE1 | 280 | 123456 | | | | | 12 FT | | 02 | TEMP DATA CHECK | |
| FATS204 | TAPE1 | 280 | 123456 | | | | | 10 FT | | | PERM DATA CHECK | |
| FATS204 | TAPE1 | 280 | 123456 | | | | | 2375 FT | 4 IN | 10 | PERM DATA CHECK | |
| FATS204 | TAPE1 | 280 | 123456 | | | | | 2375 FT | 8 IN | 10 | PERM DATA CHECK | |
| FATS204 | TAPE1 | 280 | 123456 | | | | | 2376 FT | 13 IN | 10 | PERM DATA CHECK | |
| FATS204 | TAPE1 | 280 | 123456 | | | | | 2377 FT | | | TAPE INDICATE | |

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INNOVATION DATA PROCESSING

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NEWS

CUTS from page 1

Colony predicted that "blood will be splattered around" over the next six months, with the number of compatible vendors trimming down to three or four. Christianson said it will be more of a "bloodletting" and that many such vendors are financially stronger than is generally believed.

Although IBM's move was expected to pull down price tags across the personal computer market, suppliers of compatible machines were the first to react, with several lowering their prices in the days immediately following the IBM announcement.

IBM's cuts had been widely rumored for the past several weeks. IBM had made a similar price cut for Personal Computers in Europe during the winter, and several vendors of compatible machines insisted they have been planning for such cuts since the start of the year.

"It was not unexpected," said James D'Arezzo, vice-president for corporate communications at Houston's Compaq Computer Corp. He noted that Compaq cut its prices last April to similar levels. "This is what the market is doing — what dealers are selling at," he maintained. "We have no plans to make any price changes."

D'Arezzo claimed that the cuts show "the market is not going to support a premium for IBM products," a statement seconded by some Compaq dealers.

"In the last two months, I've seen more willingness in corporations to accept an [IBM-compatible] alternative," said Dana Sawyer, president of PAX Computer Centers, Inc. in Boston. "It's a safe decision."

However, other dealers disagreed. "IBM is giving everyone a little muscle" and forcing all suppliers of IBM-compatible micros to cut prices, predicted William Driscoll, vice-president at Small Business Systems Group in Westford, Mass. "The original should always cost more than the copy."

Zenith Data Systems in Glenview, Calif., was the first major vendor to release detailed price cuts, dropping system prices by 14% to 22% on its Z-100 PC series. A Z-150 desktop system with two dual disk drives and 320K bytes of random-access memory (RAM) is now priced at \$2,799, while a similar system with one floppy disk drive and a 10M-byte hard disk drive will sell for \$4,499.

"We planned both price reductions and memory enhancements early in the fourth quarter of 1983," said John Frank, Zenith's vice-president of marketing.

"We forecast that a new pricing level in the

market would hit in midyear" as IBM's manufacturing capability caught up to demand, he said. "It's history repeating itself — anyone who didn't see it coming had his head in the sand."

Corona Data Systems, Inc. in Thousand Oaks, Calif., is cutting system prices by 10% to 18%, while add-on and peripheral costs will drop from 22% to 48%, according to Larry Lotito, vice-president for marketing and strategic planning.

Corona expected the cuts and "informed our distributors about price reductions last month," Lotito said.

This year, the personal computer market "has been a little confused, a little conservative," according to Lotito.

According to Lotito, many customers first waited to examine Apple Computer, Inc.'s Macintosh and then held back in anticipation of IBM price drops.

In addition, "a ton of new competitors have added to the confusion," Lotito said. He maintained that the IBM moves will lead to a "settling out" of the market.

Columbia Data Products, Inc. in Columbia, Md., said it plans to cut prices on its desktop and portable computers to a level 10% to 15% below IBM's new prices.

Several observers pinpointed Eagle Computer, Inc. in Los Gatos, Calif., which outlined plans to drop prices about 10%, as the company most likely to suffer from IBM's shifts. "I don't think they can take the substantial price cuts required to compete with IBM," Driscoll said, noting that IBM's manufacturing costs presumably are dropping much quicker than Eagle's.

Other vendors downplayed the need for price cuts on their models. "Obviously, if IBM cut prices further, it would put the squeeze on all of us," noted Robert Fugetta, advertising and public relations director at Seequa Computer Corp.

However, Seequa manufactures relatively low-priced compatibles and said it does not intend a price cut.

Eric Jones, president of Texas Instruments, Inc.'s Data Services Group, predicted problems for some, but not all.

"I think it will be really tough on people that were offering pure [IBM] clones and competing purely on price," Jones said. "We continue to say we are not a clone and we do not want to be considered a clone."

TI has been advertising its Professional micro as having greater capabilities than the IBM Personal Computer and has avoided mentioning price.

| New 256K-byte Model Versions | Price | Comparable Former Price With Add-Ons |
|---|-----------|--------------------------------------|
| Personal Computer 256K bytes/360K-byte Diskette Drive | \$1,995 | \$2,379 |
| Personal Computer 256K bytes/2-360K-byte Diskette Drive | 2,420 | 2,908 |
| Portable Personal Computer 256K bytes/2-360K-byte Drive | 3,020 | 3,324 |
| Personal Computer XT 256K bytes | 4,395 | 5,325 |
| System Units With Keyboards | New Price | Former Price |
| Personal Computer 64K bytes | \$1,265 | \$1,355 |
| Personal Computer 64K bytes/360K-byte Diskette Drive | 1,815 | 2,104 |
| Personal Computer 64K bytes/2-360K-byte Diskette Drive | 2,240 | 2,633 |
| Portable Personal Computer 256K-byte/360K-byte Diskette Drive | 2,595 | 2,795 |
| Personal Computer XT 128K bytes | 4,275 | 4,995 |
| 3270-PC Model 2 | 3,785 | 4,290 |
| 3270-PC Model 4* | 4,650 | 5,319 |
| 3270-PC Model 6* | 6,210 | 7,180 |
| Personal Computer XT/370 Model 568 | 6,230 | 6,720 |
| Personal Computer XT/370 Model 588 | 8,085 | 8,995 |
| Hardware Options | New Price | Former Price |
| 64K-byte Memory Module | \$ 100 | \$ 165 |
| 64/256 Memory Expansion Card | 265 | 350 |
| Communications Adapter Cable | 65 | 75 |
| Asynchronous Communications Adapter | 100 | 120 |
| Binary Synchronous Communications Adapter | 240 | 300 |
| Synchronous Data Link Control Communications Adapter | 240 | 300 |
| Diskette Drive Adapter | 125 | 220 |
| 360K-byte Diskette Drive | 425 | 529 |
| Monochrome Display and Printer Adapter | 250 | 335 |
| Printer Adapter | 75 | 150 |
| Fixed Disk Drive Adapter | 590 | 695 |
| Personal Computer Expansion Unit | 2,880 | 3,390 |
| Personal Computer XT Expansion Unit | 2,290 | 2,695 |
| 10M-byte Fixed Disk | 1,395 | 1,695 |
| 8087 Math Coprocessor | 230 | 260 |
| Printer Stand | 45 | 55 |
| Printer Cable | 45 | 55 |
| Graphics Printer | 449 | 595 |
| Monochrome Display | 275 | 345 |

* Enhanced from 320K bytes to 384K bytes of random-access memory

CW CHART

IBM cuts micro prices

BOCA RATON, Fla. — IBM slashed prices June 7 on its entire line of Personal Computers, ranging from the PCjr to the Personal Computer XT/370.

System prices dropped as much as 23%, while costs of many options also were lowered. The new prices are effective immediately at IBM Product Centers and at branch offices of the National Accounts Division and the National Marketing Division, the company said.

IBM also introduced new versions of the Personal Computer and Personal Computer XT, with 256K bytes of random-access memory standard, to be available in July.

An entry-level Personal Computer model with one 360K-byte disk drive is priced at \$1,995 without monitor, according to IBM. With monochrome monitor, the system will cost \$2,520.

The new 256K-byte version of the Personal Computer XT will cost \$4,395 without monitor and \$4,920 with monochrome monitor.

In addition, IBM announced a new version of its Portable Personal Computer with dual floppy disk drives, priced at \$3,020.

Price cuts are detailed in the chart. System prices exclude monitors.

| | Vendor | Model | Internal Memory (in bytes) disk drive(s) | Number of Expansion Slots Standard | Number of Serial Ports Standard | Number of Parallel Ports Standard | Bundled Software Applications | Price |
|--|------------------------------|--------------------------|--|------------------------------------|---------------------------------|-----------------------------------|-------------------------------|---------|
| Personal Computer compatibles with floppy disk drive(s) | IBM | Personal Computer | 256K 1 | 5 | 0 | 0 | 0 | \$2,520 |
| | Columbia Data Products, Inc. | Columbia 1600-1 | 128K 2 | 8 | 2 | 1 | 13 | 2,945 |
| | Compaq Computer Corp. | Compaq Portable Computer | 128K 1 | 3 | 0 | 1 | 0 | 2,495 |
| | Corona Data Systems, Inc. | Corona PC | 128K 1 | 4 | 1 | 1 | 4 | 2,995 |
| | Eagle Computer, Inc. | Eagle PC Plus 2 | 128K 2 | 4 | 2 | 1 | 0 | 2,495 |
| | Seequa Computer Corp. | Seequa PC | 128K 1 | 5 | 1 | 1 | 9 | 1,995 |
| Personal Computer XT compatibles with hard disk drive(s) | IBM | Personal Computer XT | 256K 10M-byte hard disk, 1 floppy | 8 | 1 | 0 | 0 | 4,920 |
| | Columbia Data Products, Inc. | Columbia 1600-4 | 128K 12M-byte hard disk, 1 floppy | 8 | 2 | 1 | 13 | 4,545 |
| | Compaq Computer Corp. | Compaq Plus Portable | 128K 10M-byte hard disk, 1 floppy | 2 | 0 | 1 | 0 | 4,995 |
| | Corona Data Systems, Inc. | PCHD | 128K 10M-byte hard disk, 1 floppy | 4 | 1 | 1 | 4 | 4,495 |
| | Eagle Computer, Inc. | Eagle Turbo XL | 256K 10M-byte hard disk, 1 floppy | 8 | 0 | 1 | 0 | 4,995 |
| | Seequa Computer Corp. | Seequa XT | 256K 10M-byte hard disk, 1 floppy | 5 | 1 | 1 | 9 | 3,995 |

CW CHART

Starting configuration prices for the IBM Personal Computer, the Personal Computer XT and some competing IBM-compatible machines as of June 8. Three of the vendors shown here (Columbia Data Products, Inc., Corona Data Systems, Inc. and Eagle Computer, Inc.) subsequently announced plans to lower their prices.



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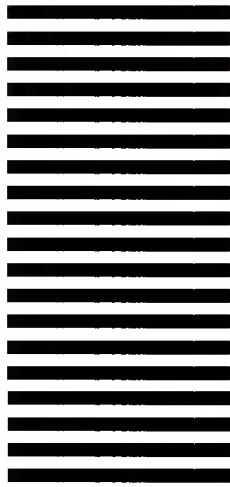
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|-----------------------------|---------|-----------------------------|---------|
| Atlanta, GA | June 19 | Kansas City, MO. | June 28 |
| Bloomington, IL. | June 26 | Lexington, KY | June 27 |
| Cedar Rapids, IA. | June 26 | Los Angeles, CA. | June 28 |
| Cincinnati, OH. | July 18 | Merrimack, NH. | June 19 |
| Cleveland, OH | July 11 | Minneapolis, MN. | June 21 |
| Columbus, OH | June 27 | Montreal, PQ | June 19 |
| Detroit, MI. | June 19 | New York, NY | June 20 |
| Ft. Wayne, IN. | July 11 | New York, NY | July 24 |
| Grand Junction, CO. | June 20 | Oakbrook, IL | July 12 |
| Indianapolis, IN | July 10 | Oakland, CA. | June 26 |
| | | Orange County, CA. | June 19 |
| | | Raleigh, NC | June 21 |
| | | Rochester, NY | June 21 |
| | | St. Louis, MO. | June 19 |
| | | Salt Lake City, UT. | June 27 |
| | | South Bend, IN | June 21 |
| | | Tallahassee, FL | June 20 |
| | | Toronto, ON | June 21 |
| | | Ventura, CA | June 26 |
| | | Washington, DC. | June 28 |

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NEWS

Information seen as strategic weapon for business



CW AT
INFO/SOFTWARE

By Paul Gillin
CW Staff

CHICAGO — The business climate of the 1980s has changed, and many companies should now be looking to emulate the examples set by airlines, banks and insurance companies in using information as a strategic weapon.

That was the assertion put forth last week by O.E. Lurie, president of O.E. Lurie Associates, Inc. of Toronto, in an address at the Information Management Exposition & Conference for Software (Info/Software) here. Lurie stated the prosperous business climate of the 1960s and 1970s has given way to a low-growth, cutthroat climate now.

"The bottom line is that in the '60s and '70s, there was enough for everyone, and we could survive by market growth," he said. "In the '80s, there is only enough for a few, and we have to learn to survive."

Trend toward small management group

The trend of this decade is toward a small and sophisticated management group that will want to use information competitively. Compared with the past, relatively little time will be spent gathering information and much time will be spent analyzing and using it, he said.

As a result of that and the many analysis tools now emerging, companies can begin to use information as a strategic weapon, Lurie said. As examples, he pointed to the airlines, which successfully converted their scheduling systems into on-line reservations systems in the '70s.

Banks brought banking closer to their customers through the use of automatic teller machines, and some insurance companies that made commitments to automation later found that the move allowed them to set rates quickly and more competitively.

Impact felt in other industries

The impact of strategic information systems is now being felt in other industries as well, the consultant maintained. Sears Roebuck & Co., for example, has successfully increased its retail business through the use of follow-up calls. A Canadian retail store found that switching to computerized cash registers reduced checkout lines and improved volume.

Lurie outlined some of the characteristics that are common to what he called "strategic/predatory systems": They are typically developed in-house and geared to a specific part of the business; they accommodate frequent change that is needed to remain competitive; they are preemptive in that they "capture information and tell you certain things that are beginning to happen," rather than waiting until after they have happened; and they are aggressive, intended specifically to capture market share by identifying areas in which the competition is inactive.

In addition, the systems are "intellect- and creativity-driven" so that the highest level of thought is allowed to filter down through the organization, Lurie said. They operate in the same way at all levels, so that the top decision makers are using the same tools as those people lower in the company.

Moreover, the systems are flexible and self-monitoring so that they identify key opportunities without prompting from the user, he said.

The MIS department can be pivotal in develop-

ing strategic systems, Lurie maintained, if it has a good idea of what the organization wants to accomplish. It is crucial that the company define its business objectives to MIS and decide which projects are worth pursuing.

For example, a cash-poor company will not want to pursue a project that requires a large initial investment, he said.

The organization also has to identify key "profit points" where automation is best applied. For example, airlines will soon be improving service by allowing passengers to rate service on their flights and by tabulating the results quickly.

The plan must also identify competitive edges that make customers go to one company or another, he added. It also needs to identify the data that is needed to capture that edge.

Finally, the organization needs to design a way to capture, retain and use that information and to develop a computerization strategy in concert with MIS, according to Lurie.

Lurie asserted that many companies can realize these advantages at low cost by simply automating a part of their business that no other companies have thought to computerize. A large number of new tools are available to do that, he said. These include relational data base management systems, data validation facilities, intermachine communications, interactive entry and edit facilities, loaders, sort and search software and products that can handle large data bases.

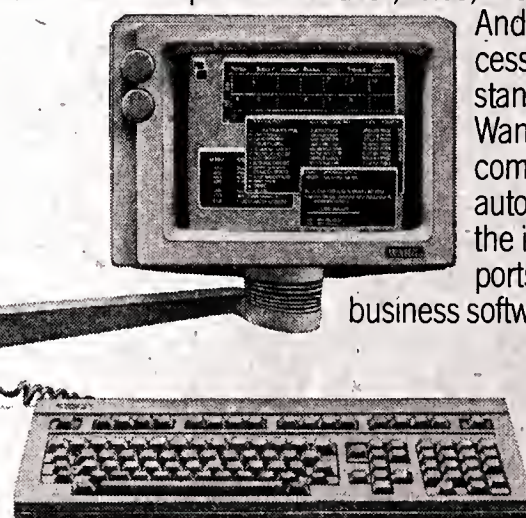
In addition, hundreds of tools are now available for forecasting, analysis and statistics across many dimensions, he said. "All these tools are available now, so there's nothing to stop us from proceeding ahead with strategic systems," he concluded.



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NEWS

Vendors clash on product preannouncement policies

Debate centers on benefits vs. anticompetitiveness of prereleases



CW AT
INFO/SOFTWARE

By Paul Gillin
CW Staff

CHICAGO — A panel of representatives from six major software companies clashed here last week at the Information Management Exposition & Conference for Software (Info/Software) show on the issue of product preannouncements.

In response to a question about their policies on preannouncing software products before the products are ready for market, the panelists split between those claiming that some preannouncements are good at providing a statement of product direction and others who condemned the policies as anticompetitive and unfair to the customer.

The panelists included John Landry, vice-president of research and development at McCormack & Dodge Corp.; Frank Chisholm, executive vice-president of Cullinet Software, Inc.; Bruce Coleman, president of Informatics General Corp.; Martin A. Goetz, president of Applied Data Research, Inc.; Dennis Vohs, vice-president of research and development at Management Science America, Inc.; and Thomas Nies, president

of Cincom Systems, Inc.

The strongest statement was from Landry, who criticized a preannouncement made by "one software vendor" last year of an agreement with Apple Computer, Inc. that subsequently fell through. His remarks were an oblique reference to Cullinet's April 19, 1983 announcement of an agreement to tie the Apple Lisa into Cullinet's Information Database.

'A disservice to the industry'

"That did a disservice to the industry," Landry said. "People bought Apples because of that announcement, and the deal never materialized."

Other panelists pointed out that IBM has the longest history of preannouncing products.

"Our success [at preannouncements] pales with the success of IBM," Coleman stated. He added that Informatics does not generally announce products unless there is at least some documentation available

for them.

Chisholm and Goetz took up a position in favor of limited preannouncements.

"I think it's important today to announce your intentions as early as possible," Chisholm said, "as long as you can announce delivery dates and not miss them [by a wide margin]."

Legitimate reasons

Goetz basically concurred: "IBM's logic has always been that users require products for planning. In many cases, there are very legitimate reasons [to preannounce]. It's user beware."

Other panelists, however, strongly disagreed. "People who are preannouncing are going to lead us back into a time when people didn't trust

software companies," Vohs maintained.

"Don't let anyone kid you," he added. "The only reason people preannounce is because they have an empty void that 'vaporware' is filling."

Nies noted that Cincom makes a distinction between public announcement and announcement to its users. "Our strategy is to play our cards close to the vest so competitors don't know what we're doing," he maintained.

"In the past, however, we have told our users. But when [we hold a press conference], we always give demos and can take orders at press time. We don't want to turn [the trade press] into buffoons," Nies said.



Software company executives consider an issue during their debate.

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NEWS

Run info center as separate profit center, user urges

Says it maximizes return on end-user computing investment, changes attitudes



CW AT
INFO/SOFTWARE

By Paul Gillin
CW Staff

CHICAGO — Running an information center as a separate profit center can maximize return on your end-user computing investment. It can also dramatically turn around general user attitudes toward DP.

This was the view of Jeffrie Shelley, manager of the information center at the Chicago Transit Authority

(CTA), who addressed an audience last week at the Information Management Exposition & Conference for Software (Info/Software) here. Shelley said that careful planning has brought structure to an end-user computing environment that already existed at CTA. It has also improved DP's image within the organization, although it has not reduced the application backlog, he said.

The CTA began planning an information center two years ago in an unusual hardware environment that included a Sperry Corp. 1100/62 mainframe as well as an IBM 3033, with different end-user applications

running on each. Some users had as many as three terminals on their desks connected to different machines, he said.

Sperry solved part of the problem by introducing a protocol converter that allowed IBM terminals to run on Sperry mainframes, Shelley said. The CTA solved the other part by setting up and enforcing strict information center principles and by standardizing usage of several software packages. On the 3033, the software includes IBM's Query By Example, SAS Institute, Inc.'s SAS line of products and a generalized reporting package. On the Sperry mainframe, CTA runs

Sperry's Mapper, Sperrycalc and Sperrylink.

The major responsibilities of three information center consultants are to provide training, consulting and hot-line support and to keep abreast of new developments in information center technology, Shelley said. Each consultant specializes in a particular product or products and teaches classes in those products using relevant business data.

Communications skills key

Shelley stressed that information center consultants need to be good communicators. Technical skills are considered secondary, he said.

On the consulting side, the staff makes users aware of information center offerings, guides users in choosing environments and tools and offers ongoing instruction in the use of those tools. Each consultant is also responsible for hot-line support to specific departments. Those departments always deal with the same consultant, Shelley stressed.

Users must take responsibility, too — a requirement that the CTA enforces by enforcing chargeback procedures. Before becoming involved in a project, the staff requires that the user understands the problem to be solved, can identify the data needed to solve it, knows how to use terminals and packages and, most importantly, agrees to do the work himself. "The information center staff shouldn't do any coding, or it will develop its own backlog," Shelley said.

Applications must be justified

Users are also responsible for justifying the cost of their applications to their management. In a related point, Shelley stressed that the information center "should run like a profitless profit center." A chargeback system will keep the center running much more efficiently, he said.

Although it is only two years old, the information center at the CTA will have 375 users and about 175 major user-developed applications by the end of the year, Shelley said. Six major data bases will have been converted from IBM to a Mapper environment.

Shelley outlined some lessons he had learned from the information center experience. "It's very important to differentiate between training DP [personnel] and training users," he said. "Users have to be familiar with DP before they can become productive."

Shelley also stressed that information center staff members should specialize in only a few products, but should be able to communicate the features of those products well to the users. He advised that consultants should work in proximity to each other. And if work piles up, do not be afraid to hire outside consultants to support training.

Shelley also proposed that user education budgets should be separated from DP budgets. Once users begin to appreciate what DP can offer, their attitudes will change, he said. "We have found a turnaround in the attitude of users toward DP," he noted. "It's much less difficult to find funds to staff and operate the data center."

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NEWS

Exec urges renewal, not replacement of obsolete systems



CW AT AMS

By John Gallant
CW Staff

CHICAGO — Data processing management should adopt a strategy of information systems renewal, rather than replacement, when faced with obsolete manufacturing applications.

Too often, according to Glenn Mangurian, a principal with Cambridge, Mass.-based Index Systems, Inc., corporations undertake expensive and time-consuming manufacturing information systems replacement projects without reviewing the variety of alternatives available.

Speaking at the Advanced Manufacturing Systems (AMS) conference here last week, Mangurian said this short-sighted approach to managing systems obsolescence can often lead to frustrating and costly failure.

According to Mangurian, most companies have at least two major manufacturing systems that are in need of constant maintenance or significant upgrading.

Those transaction processing applications were likely developed or purchased during the organization's first attempts at automating manufacturing information functions in the mid-1960s, what he termed the "foundation systems construction era."

In addition, Mangurian said, other manufacturing applications were added atop those systems during the "MIS expansion period" of the late 1970s, without regard for basic functional or technological flaws inherent in the earlier applications.

Obsolescence wall

As a result, manufacturing systems in many firms are approaching what he called the "technical obsolescence wall."

"That is a problem that management has not yet learned to handle," Mangurian said.

"The original hardware and software vendors are no longer willing to maintain their products. Also, end users have matured. They are tired of the deficiencies inherent in the manufacturing systems that are now technically and functionally obsolete," he said.

That problem, he said, can have a devastating effect on DP's long-range planning, which is bogged down as increasing maintenance requirements draw resources and funding away from new applications development.

But, viewing replacement of obsolete manufacturing systems as the only option, corporations implement major systems overhauls — often with shocking results.

The system that required man-years to develop initially, may now require man-centuries to replace, he said.

Mangurian said that many firms fall into a trap of viewing an existing system as a single entity, rather than breaking it down into logical components that can be addressed on the basis of their importance to the organization.

Also, once the replacement effort is under way, users and management

demand that new functions be included in the application, expanding an already burdensome task into a bigger and riskier project. Thus, many replacement projects are doomed to failure.

But, total replacement of obsolete manufacturing systems is only one option available — a fact that Mangurian said management often fails to realize. Instead, an organization can:

- Continue to maintain the system. Though not a "least-cost" alternative, Mangurian said, it may be more appropriate based on the organizational structure of the company and the development resources available to it. Continued maintenance,

however, requires a commitment to monitoring system performance actively, updating documentation and retraining workers to support the application.

- Renovate a manufacturing system to preserve its strengths, while eliminating its technical weaknesses. This surgical approach can bring attractive results, Mangurian said.

- Augment the application by adding new features on top of or around the system. This option is useful for manufacturing systems that, while technically sound, have lost their functionality as the organization evolved, according to Mangurian.

- Eliminate the manufacturing

application entirely. Many systems targeted for exhaustive replacement projects, Mangurian said, are simply no longer needed. Discontinuing the use and maintenance of such systems can result in cost savings for the organization.

"Scrapping and replacing an entire system remains an alternative," Mangurian said.

"But it becomes a more credible option if you have carefully reviewed the others. A systems renewal strategy allows you to focus on your options, and it gives you the criteria with which to evaluate them. You will likely wind up spending far less money to manage your obsolete systems," he said.

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NEWS

Visicorp enhances Vision, unveils floppy-disk version

By Eric Bender
CW Staff

SAN JOSE, Calif. — Visicorp today is scheduled to announce a higher performance release of its Vision integrated microcomputer software and a new version of the same software that does not require a hard disk drive.

Company Chairman Dan Fylstra said the two moves are designed to address two main stumbling blocks for Vision sales — speed limitations and system entry costs.

Vision Version 1.2 will boost recalculation speeds for large spreadsheets up to 10 times, shorten time for data swapping between functions 30% to 60%, provide "instantaneous" paging through large word processing documents and offer 30% improvement in spreadsheet scrolling performance, Fylstra said.

Most users felt that the original release's speed was satisfactory when it ran on a Wang Laboratories, Inc. Professional Computer built around an Intel Corp. 8086 chip rather than IBM's 8088-based Personal Computer, Fylstra maintained.

Version 1.2 for the IBM Personal Computer is scheduled for shipment by early July. The new release will not affect Vision prices, Fylstra said. Visicorp is offering the Vision applications manager, Visioncalc, Visiongraph, Visionword and mouse bundled for \$795 until June 30.

The floppy disk-based Vision "will have all of the features and many of the performance characteristics of hard disk-based Vision, except that the Vision applications and Help text will be stored on floppy disks which must be inserted when the application is started or help is requested," Fylstra said.

Users can upgrade to a hard disk version by purchasing the hard disk Vision application manager, but the applications themselves will run on either type of system, Fylstra said. Priced under \$200, the floppy disk Vision application manager is expected to begin shipment around September.

The company is also slated today to disclose plans to bundle the Vision mouse with two applications, to offer a software development tool kit for the IBM Personal Computer XT and to develop another Vision window that runs off-the-shelf Microsoft, Inc. MS-DOS applications.

The mouse will be offered with a "painting" application and a pop-up menu program, both written by Mouse Systems Corp. in Santa Clara, Calif.

Fylstra said the painting software allows the mouse to

act as a paintbrush for on-screen drawing, while the menu package permits the mouse to work with stand-alone applications, such as Microsoft, Inc.'s Multiplan or Lotus Development Corp.'s 1-2-3. The bundle, selling in the \$250 range, will be delivered by September, he said.

Presently, with few software programs supporting

them, mice are generally seen as extra-cost liabilities rather than as useful peripherals, Fylstra commented.

Like the floppy-based system, the new bundle was created to encourage personal computer users to move into a full Vision configuration one step at a time, Fylstra commented. Most users are accustomed to buying stand-

alone packages one at a time rather than paying over \$1,000 at once, as a complete Vision system required before price cuts this spring.

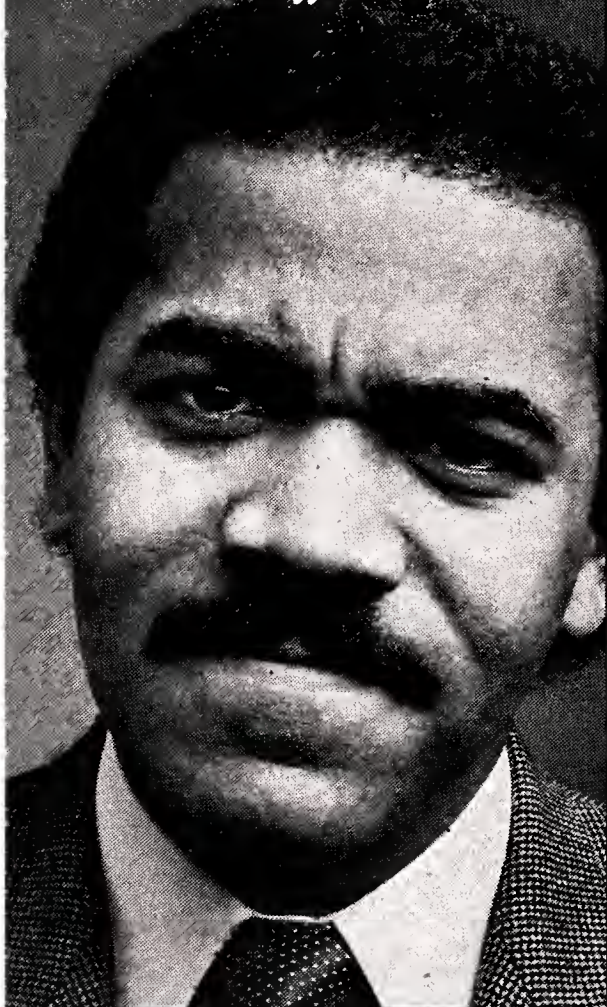
Another cost barrier, the 512K bytes of random-access memory (RAM) required to run Vision, "seems to be going away" as memory prices drop, Fylstra said.

Visicorp's new tool kit,

scheduled for September shipment, will run on a Personal Computer XT with 512K bytes of RAM under PC-DOS, according to Fylstra.

The MS-DOS window, designed to run "virtually any existing application" within the Vision software environment, will be available by October, Fylstra estimated.

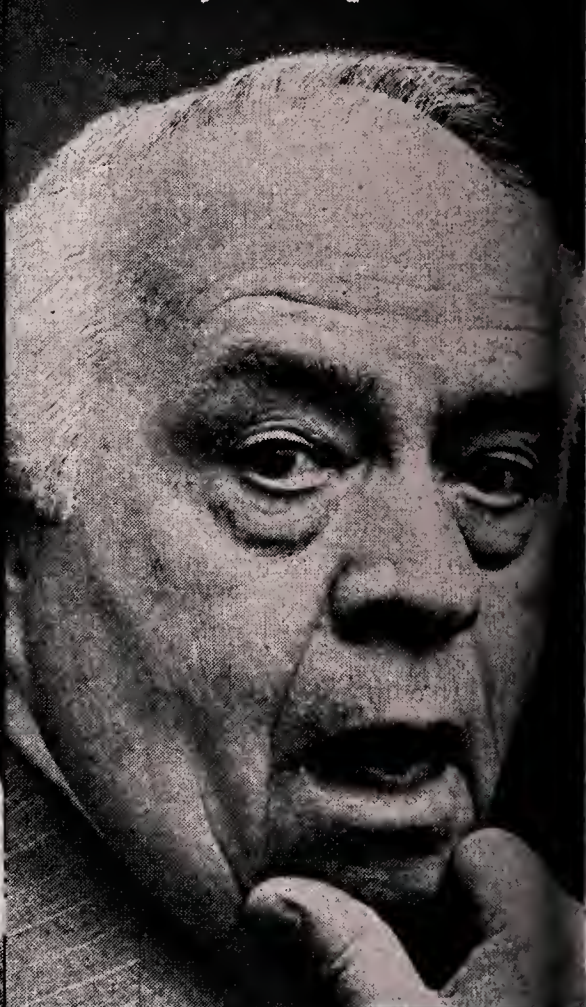
"All I need is one more field on this report. Why is that so difficult?"



"But, it's simple! Just take these two columns from the customer status report and these three columns from the prospect analysis report..."



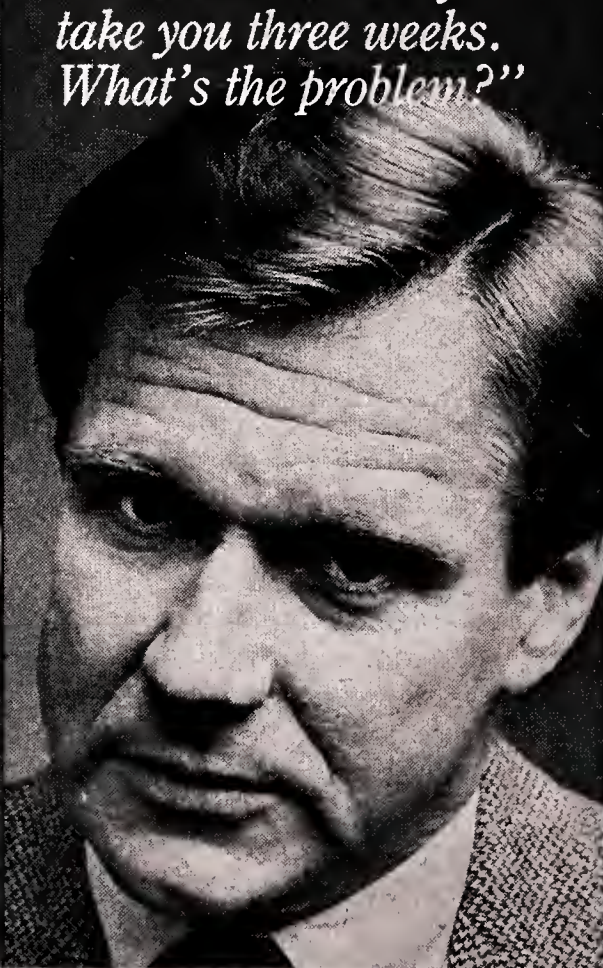
"Are you serious? Six months before we can see the first report?"



"I know the data is in there somewhere. Why can't we get at it?"



"I can get this data from the information center in two hours. You say it'll take you three weeks. What's the problem?"



"I can make that report myself with a pair of scissors and some tape."



NEWS

FCC delays private-line rate hike for up to five months

By Phil Hirsch
CW Washington Bureau

WASHINGTON, D.C. — The imposition of substantially higher rates for private-line services has been delayed by the Federal Communications Commission for up to five months.

In an order issued June 8, the commission suspended the rate hikes proposed by

the nation's local telephone companies in March, hikes which had been scheduled for implementation June 13. The new effective date is Nov. 13.

The commission said its aim is to review the filings as quickly as possible. It explicitly raised the possibility that a tariff filed by the Rochester (N.Y.) Telephone

Co., which is structured differently from those of the other local carriers, might be authorized before the others. The commission also indicated that it would consider phasing in any rate increases to minimize the impact on customers.

In addition to local exchange carriers, AT&T also has filed a new private-line

tariff now scheduled to become effective July 1. But because AT&T's proposed rates depend partly on the local carriers' charges, the latter tariff is also likely to be deferred. An AT&T spokesman said last week that the company was reviewing its options.

Although the carriers said their March revisions com-

plied with the commission's requirements, the FCC said in its June 8 order that there are still "significant questions" to be answered.

Besides suspending the special access tariffs, the commission also suspended a \$25 per line per month surcharge that was to be imposed on private lines which can be connected to local networks through private branch exchange or similar switching equipment.

The commission asked the National Exchange Carriers Association, which represents most of the nation's local carriers and which submitted the special access tariffs on their behalf, to develop a proposal for implementing the surcharge separately. Once this proposal is submitted and reviewed, the commission said it hoped to put the surcharge into effect before Nov. 13th.

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Putting Information To Work

Naruc turns to top court

WASHINGTON, D.C. — The U.S. Supreme Court will be asked to review the Federal Communications Commission's controversial access charge plan, a spokeswoman for the National Association of Regulatory Utility Commissioners (Naruc) said here last week.

Her comment came a day after the U.S. Court of Appeals here rejected petitions for review filed by Naruc and 12 other organizations. They included the Ad Hoc Telecommunications Users committee, representing large corporate communications users; vendors of terminals and information services; and specialized communications carriers.

The 110-page appeals court decision eliminates one obstacle barring implementation of the FCC plan. That plan is now effective for multiline business users of the switched-telephone network. Access charges for single-line business users, residential and some private-line users are likely to be imposed during the next several months.

A key issue in the case, according to Naruc, is whether a 1930s court decision (*Smith vs. Illinois Bell*) required certain local-exchange costs to be recovered from interstate customers.

Naruc said yes, while the FCC said no.

The issue is critical because the new access charges, which are designed to recover those costs, replace fees formerly paid by long-distance carriers and passed on to their customers.

NEWS

Celtics, Lakers set pace for league

First in NBA to acquire computer technology

By John Desmond
CW Staff

BOSTON — Was it coincidence that the Boston Celtics and Los Angeles Lakers, this year's National Basketball Association (NBA) championship series finalists, have been foremost in the league in acquiring computer technology?

"I don't think it's a coincidence," said Joseph Marvin, head of MDS Qantel, Inc.'s NBA and National Hockey League marketing. "I think it just shows that true leaders are always prepared."

The Boston Celtics, crowned current world champions after a seventh-game victory last week, were the second NBA team to acquire a Qantel system. The Lakers were the first, having installed a Qantel System 40 in April 1983, even before the NBA acquired its own System 40 for its New York headquarters.

Following the Celtics installation, Qantel signed on the Utah Jazz, Indiana Pacers and New Jersey Nets,

Marvin said, adding that another seven teams are "close to doing something."

The Celtics' system initially will be used for accounting and season ticket sales, according to Joseph DiLorenzo, Celtics controller. As software becomes available, the Celtics plan to use the system for scouting, statistics, game analyses and current player profiles, DiLorenzo said.

The Celtics chose the Qantel system because it ties into the league's Qantel system, DiLorenzo explained. One advantage of the connection is the ability to obtain up-dates instantly on player's salaries, which have a minimum and maximum limit for each team under an NBA collec-

tive bargaining agreement in effect this year. The Lakers may have been the first team to use the Qantel system, but now that the salary cap data base is available from the league office, "The Celtics are the first team to take

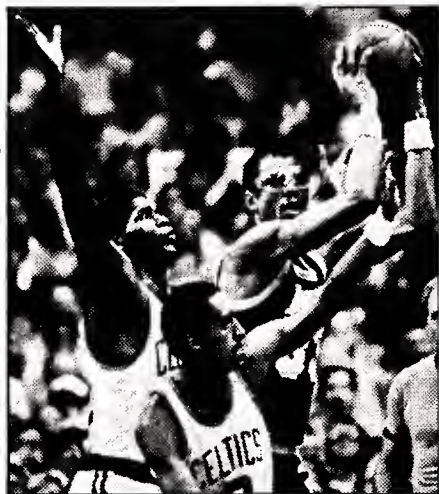
advantage of that in this year's draft," according to Marvin. He acknowledged that, "It's all strategy. It doesn't mean its use will produce concrete results."

The Celtics' System 20 consists of six terminals, expandable to 32, 256K bytes of main memory, 40M bytes of disk storage, 300 line/min printers for season tickets and play-off tickets and a 150 char./sec printer for general accounting, Marvin said. The Lakers have a larger System 40, for handling all L.A. Forum events, consisting of 17 terminals, a 348K-byte memory, 150M-byte disk storage, two 600 line/min printers, one letter-quality printer and one 150 cycle/sec printer.

Qantel said most of the sports modules are still being developed. In fact, the scouting software is being developed with assistance from the Lakers' general manager and former NBA star Jerry West.

"I want to give each team criteria to decide what they feel is important, not what Jerry West feels is important," Marvin said.

Tom Yamada, director of computer operations for California Sports, the management company for the Lak-



Kareem Abdul-Jabbar, stellar pivot man for the Los Angeles Lakers, had his hands full in the seventh and deciding game of the NBA playoffs against the Boston Celtics last week.



Jabbar and Celtics star Larry Bird collided on the court last week, acting out strategies that will be aided by already-installed computer systems in both the Lakers and Celtics front offices.

ers, said that not all the promise of Qantel's software is yet being delivered.

"The main problem we've had is that the existing software was set up for football," he said. Many time-consuming modifications have been required, but, Yamada said, "As far as I know, Qantel has a corner on the market for a canned package."

As to whether the system will ever be useful in basketball game analysis, Yamada said, "I have my doubts. I think basketball is too subjective," on the part of the players.

Honeywell, DG, Prime get OK to supply OA equipment to Senate

WASHINGTON, D.C. - The Senate Committee on Rules and Administration decided last week to permit Honeywell, Inc., Data General Corp. and Prime Computer, Inc. to provide office automation equipment to Senate offices.

A total of 32 companies had responded to the Senate's request for proposals [CW, May 28]. The chief application is expected to be word processing.

Honeywell, DG and Prime were rated highest among the six finalists,

according to Patrick Sarman, staff member of the Senate Committee on Rules and Administration. The Senators had decided to pick the top three companies rated by evaluations of technical aspects and by a user's panel representing 37 offices.

The other three finalists were Digital Equipment Corp. and two systems integrators, M/A-COM Sigma Data, Inc. and Inslaw, Inc. Sarman said the hardware manufacturers had an advantage over the integrators because their software was well-integrated with their equipment.

Final contracts with the vendors are expected to be signed next week. Once systems are chosen, Sarman said, up to six offices will be automated each week. He expects the lifetime cost of Senate office automation to be less than \$20 million.

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Management focus of meet

BOSTON — A seminar designed to keep information management aware of evolving management principles and tools will be held June 25-27 at the Marriott Hotel Long Wharf here by Nolan, Norton & Co. (NNC).

NNC, a consulting firm, said the seminar will include an introduction to management approaches, a description of the financial foundation needed for information systems growth and an approach for managing the portfolio of information systems as an asset.

The registration fee is set at \$1,250. More information can be obtained from NNC, Registrar, One Forbes Road, Lexington, Mass. 02173.

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- End Users**
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 - 20 Finance/Insurance/Real Estate
 - 30 Medicine/Law/Education
 - 40 Wholesale/Retail Trade
 - 50 Business Service (except DP)
 - 60 Government—State/Federal/Local
 - 65 Public Utility/Communication Systems/Transportation
 - 70 Mining/Construction/Petroleum/Refining
 - 75 Other User

Vendors

- 80 Manufacturer of Computers, Computer-related Systems or Peripherals
85 Computer Service Bureau/Software/Planning/Consulting
90 Computer/Peripheral Dealer/Distributor/Retailer
95 Other Vendor

33 Other Verbiage

2. OCCUPATION/FUNCTION (Circle One)

- 11 President/Owner/Partner/Chief Manager
- 12 VP/Assistant VP
- 13 Treasurer/Controller/Financial Officer
- 21 Director/Manager/Supervisor DP/MIS Services
- 22 Director/Manager of Operations/Planning/
Administrative Services
- 23 Systems Manager/Systems Analyst
- 31 Manager/Supervisor Programming
- 32 Programmer/Methods Analyst
- 35 OA/WP Director/Manager/Supervisor
- 38 Data Comm Network/Systems Mgmt
- 41 Engr/Scientific/R&D/Tech Mgmt
- 51 Mfg Sales Reps/Sales/Marketing Mgmt
- 60 Consulting Mgmt
- 70 Medical/Legal/Accounting Mgmt
- 80 Educator/Journalist/Librarian/Student
- 90 Other

90 Other _____

3. COMPUTER INVOLVEMENT (Circle all that apply)

Types of equipment with which you are personally involved either as user, vendor or consultant

- A. Mainframes/Superminis
- B. Minicomputers/Small Business Computers
- C. Microcomputers/Desktops
- D. Communications Systems
- E. Office Automation Systems

NEWS

Two banks close to full micro-based EFT

By James Connolly
CW Staff

Two banks recently took steps moving them closer to fully automated, microcomputer-based electronic funds transfers (EFT). One bank originated a corporate trade payment (CTP), and the second installed a micro-based EFT system.

Wells Fargo Bank, N.A., in San Francisco, completed an experimental CTP with electronic funds being transferred from a Menlo Park, Calif., food service firm to a Chicago bank.

According to Wells Fargo officials, it marked the first time a West Coast bank originated a corporate trade payment and was a key step in developing a personal computer-based CTP system, called Microexpress, scheduled for completion late this summer.

The Arizona Bank in Phoenix, meanwhile, installed an IBM Personal Computer-based network that links the bank to three EFT wire services.

Large difference in cost

In the Wells Fargo case, the CTP — similar to CTPs handled by several Eastern and Midwestern banks — was intended to test the bank software's ability to send as well as receive a CTP, which is expected to cost only \$1 to \$2 per payment, rather than the \$7.50 to \$20 that a traditional wire transfer costs.

"A CTP is essentially an electronic check with the invoice information attached," explained Dave Kvederis, senior vice-president in Wells Fargo's cash management division. "There is even a space to include messages," he added.

The Wells Fargo-originated CTP in May shifted funds from Saga Corp., of Menlo Park, to the Harris Bank in Chicago as payment for bank services that Harris provided to Saga. The only paper involved in the transaction was Harris' invoice to Saga, and in the future, even invoices such as these can be sent electronically, said David Kurrash, vice-president for cash management sales at Wells Fargo.

Saga's prearranged request for a CTP and the relevant information was transported on magnetic tape to Wells Fargo, a step that can be bypassed with tape-to-tape transfers, and keyed into the bank's IBM 3081 mainframe for editing and transmission to a regional automated clearinghouse, Kurrash said. The clearinghouse then relayed the payment through the Federal Reserve System and a Chicago-area automated clearinghouse to Harris.

CTP advantage

Kurrash said an advantage of CTPs over traditional wire transfers is that the CTP process takes into consideration float — they allow corporations to negotiate as to when the receiving account is credited with funds and let the sender use those funds until that time.

The next six to nine months will see corporations using personal computers to transmit CTP requests to their banks, Kurrash added.

In Phoenix, The Arizona Bank has installed a Bankpro Systems' Wirenet, a local-area network of 11 IBM Personal Computers handling on a

daily basis 500 incoming and outgoing electronic funds transfers worth \$500 million.

"In automating with the Wirenet system, we have replaced our manual transfer operations, which entailed constant telephone and paper communications between our wire room and our nearly 100 branch offices," said Robert M. Fink, Arizona Bank's vice-president and project director at the bank's operations center.

"As a result, we have created a secure funds transfer environment in which the chance for error and the opportunity for malfeasance are vastly reduced," he said.

The Wirenet includes a Davong

Systems, Inc. token-ring network and a Persyst, Inc. communications board for the IBM Personal Computers, which have memory expansion boards raising their main memory to 512K bytes.

The network allows bank wire rooms to communicate with their bank's mainframe, with other banks and with EFT wire services, such as the Federal Reserve's Fedwire service.

According to Fink, the Bankpro Wirenet system maintains security profiles on each operator and workstation and specifies the functions that the operator or terminal may perform.



Bankpro Systems' Wirenet employs IBM Personal Computers in a local-area network at The Arizona Bank in Phoenix.

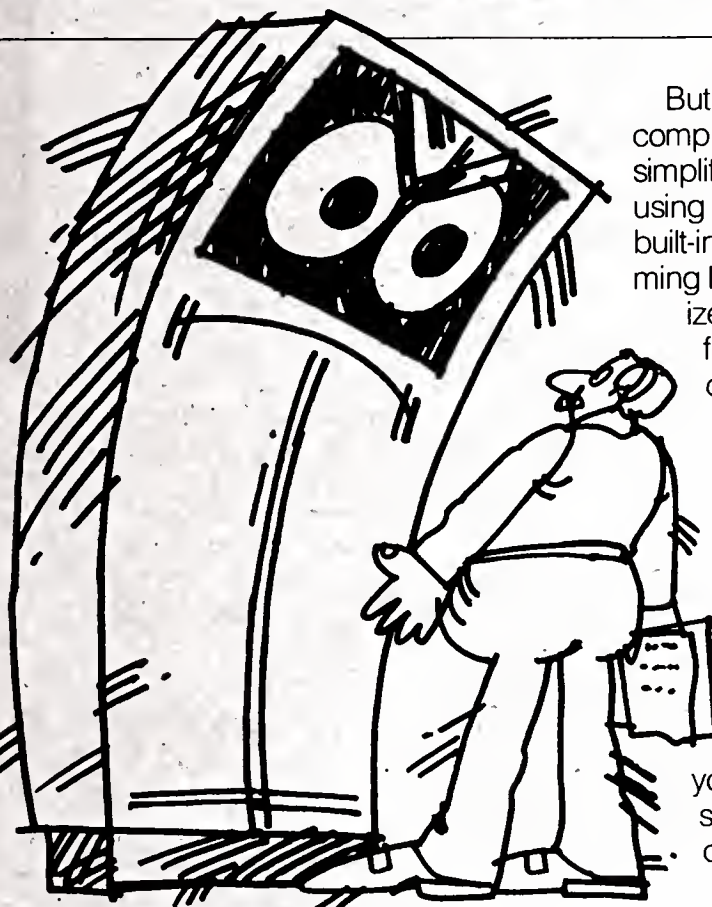
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NEWS

Watch for signs of stress that threaten your DP site



STRESS IN THE DP SHOP Part 2

By Dr. Paul E. Greenfield
and Larry Raskin

Part 2 of a three-part series.

Excessive stress can be costly to your data processing operation. Mistakes, poor morale, lowered productivity, absenteeism and turnover are often the consequences of fierce competition in today's business world. Profitability may well depend on how successfully your company manages its business requirements and human needs.

Last week we defined stress and then presented six factors that can increase stress levels: ambiguity, conflict, overload, change, responsibility and physical conditions. By paying attention to the stress signals these cause — in your DP shop, in your company and in yourself — you can help ensure peak performance for your employees.

While direct confrontation with danger causes us either to "fight or flee," most stressors are less dramatic. Most often, our reaction to day-to-day stress is to be "keyed up," worrying, work-

ing long and hard, rushing to get everything done. As a result, we often create more stress for ourselves.

Some people use drugs or alcohol to alleviate the stress. But when we ignore the causes of stress, we set the stage for more serious physical and mental ailments.

While any organization is made up of the people in it, it also has a life of its own — it acts, reacts, grows, gets ill, competes and constantly changes. Much as a living organism, each organization interacts with its environment.

In the DP profession, job mobility, competition and the rapid introduction of new technologies and products all create an atmosphere of potentially excessive stress. An organization may then respond with "messages" signaling unhealthy levels of stress on individuals: Turnover and internal transfers may increase as employees seek healthier work environments.

There may be an increase in medical claims for a wide range of illnesses. Absenteeism may rise as people reach their breaking points and take time off to relax, get well or interview with other companies. Missed deadlines and lower productivity may also result. Exit interviews, as well as reports from personnel and department heads, can highlight trends.

Paying attention to your employees is the best barometer of the stress level in your organization. Notice significant changes in work patterns. Has the manager of documentation stopped greeting you with a smile and a joke each morning? Has a supervisor's management style become more rigid and

productivity.

A distinct type of individual has begun to emerge in high-tech environments. Bright, analytic and driven, these individuals are totally absorbed in their work and machines. They are usually emotionally rigid or flat, out of touch with their feelings and withdrawn from family,

friends and co-workers. They suffer from such stress-related dysfunctions as illness, burnout and inability to manage interpersonal relations. The following are a few symptoms:

- Social isolation.
- Long hours at work; working

nights and weekends.

- Little recreation time.

- Alcohol or drug abuse by their partners and/or children.

- Poor school performance by their children.

- Increased fighting among family members.

- Sexual problems.

A significant change in someone's life status can also trigger stress-related symptoms. Divorce, illness, death of a family member or friend or a change of residence have been identified as major causes of stress. A programmer separating from his wife and moving out of his home has a new set of priorities: where to live, how to reorganize his social life, perhaps even where and when to eat. His need to excel or achieve is greatly reduced.

In addition to the stress messages from others, as an MIS manager, you should be attuned to your own signals. When stress becomes excessive, your health will warn you to protect you from further harm. Listening to these signals and determining their causes will help you effectively manage stress.

Stress symptoms

Symptoms can include:

- A change in your sleep pattern — trouble falling asleep or waking up early in the morning, before your normal wake-up time.

- Anxiety — racing thoughts, a feeling that electricity is charging through your body.

- A change in eating habits — loss of appetite, a pronounced weight loss or gain.

- Depression — lethargy, lack of concentration, feeling blue.

- An increase in alcohol or drug use.

- Headaches, lower back pain, muscle pain.

- Frequent colds or flu, asthma attacks.

- Heart palpitation, chest pains, shortness of breath.

- Skin rashes (eczema, dermatitis).

- A change in sex life and/or sexual dysfunction.

Awareness of personal, interpersonal and organizational signals of potentially harmful stress can lead to successful stress reduction. Such actions might include managing your time more effectively, showing concern for stressed employees and changing policies or procedures to promote personal and organizational health.

In the DP profession, job mobility, competition and the rapid introduction of new technologies and products all create an atmosphere of potentially excessive stress. An organization may then respond with "messages" signaling unhealthy levels of stress on individuals.

his conflicts with end users more frequent?

Personality changes

Such changes in personality or performance are often indicators of excessive stress. Other messages include changes in an employee's physical appearance, hygiene and personal habits. An employee suffering from excessive stress may become careless or compulsive.

A software engineer began washing his hands and face after coming to work each morning, then frequently examined his eyes and skin throughout the day. Later, on the verge of a breakdown, he took an extended leave of absence. A timely intervention could have helped him sooner and could have saved the company the loss of his

Cozzi named ICCA chief

HOUSTON — Harry A. Cozzi was elected president of the Independent Computer Consultants Association (ICCA) at its annual meeting here last month.

Cozzi founded ICCA's New York and New Jersey chapter in 1981 and served as that chapter's president for two years. His responsibilities as president of the 3,000-member association include overseeing national committee activities, coordinating events with the national board and overseeing association affairs.

Cozzi is president of Automated Software Design, Inc., a Middletown, N.J., consulting firm. He has worked as a programmer analyst, system designer and project manager at several New York firms.

The new president's term runs until May 15, 1985.

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NEWS

MIS scope seen altered as store-level systems abound

By Robert Batt
CW West Coast Bureau

NEW YORK — The development of point-of-sale (POS) and other store-level systems over the next two years will support the growing decentralization of data processing functions within the retail industry.

This is one of the main conclusions reached in a nationwide survey of 95 MIS directors and chief financial officers of retail firms by Arthur Young & Co., a management consulting firm based here.

The recently released survey, "MIS Expenses in Retailing," reported that 58% of those questioned said they plan to implement POS systems by the end of 1985. For those companies with sales over \$500 million, the figure was 75%.

At the same time, two-thirds of these large retailers also plan to develop other store-level systems over the same period for newly developed applications such as sales personnel scheduling, the survey added.

"As the MIS sophistication of retailers has grown, POS systems have become more feasible, attractive and, indeed, essential for an organization's profitable existence in the current retail marketplace. . . . [This] development will support the decentralization of the MIS functions reported by the larger retailers," the survey claimed.

The survey covered executives in 42 specialty stores, 22 department stores, 20 mass merchandisers and 11 companies that operate a combination of drug, mass merchandise and grocery stores.

Many of the respondents who indicated they have already implemented a POS system also said they are planning to install additional systems. This, the survey noted, "is a reflection of both the changing POS technology and the growing realization by retailers of the need for these store-level systems throughout the organization."

In the area of microcomputers, the survey reported that over 80% of the companies surveyed use micros independently of the central data processing system.

"Retailers have adapted microcomputers for specialized applications, such as modeling, cash flow analysis, purchase analysis and other analytical work. Recent technological advances may allow micros to become extremely useful in interactive relationships with POS systems for inventory control,

general accounting and sales audits," the survey said.

"As the use of microcomputers and word processing systems becomes more widespread, a definite plan for managing the acquisition and implementation of the equipment becomes more important. The inclusion of this equipment in the annual plan

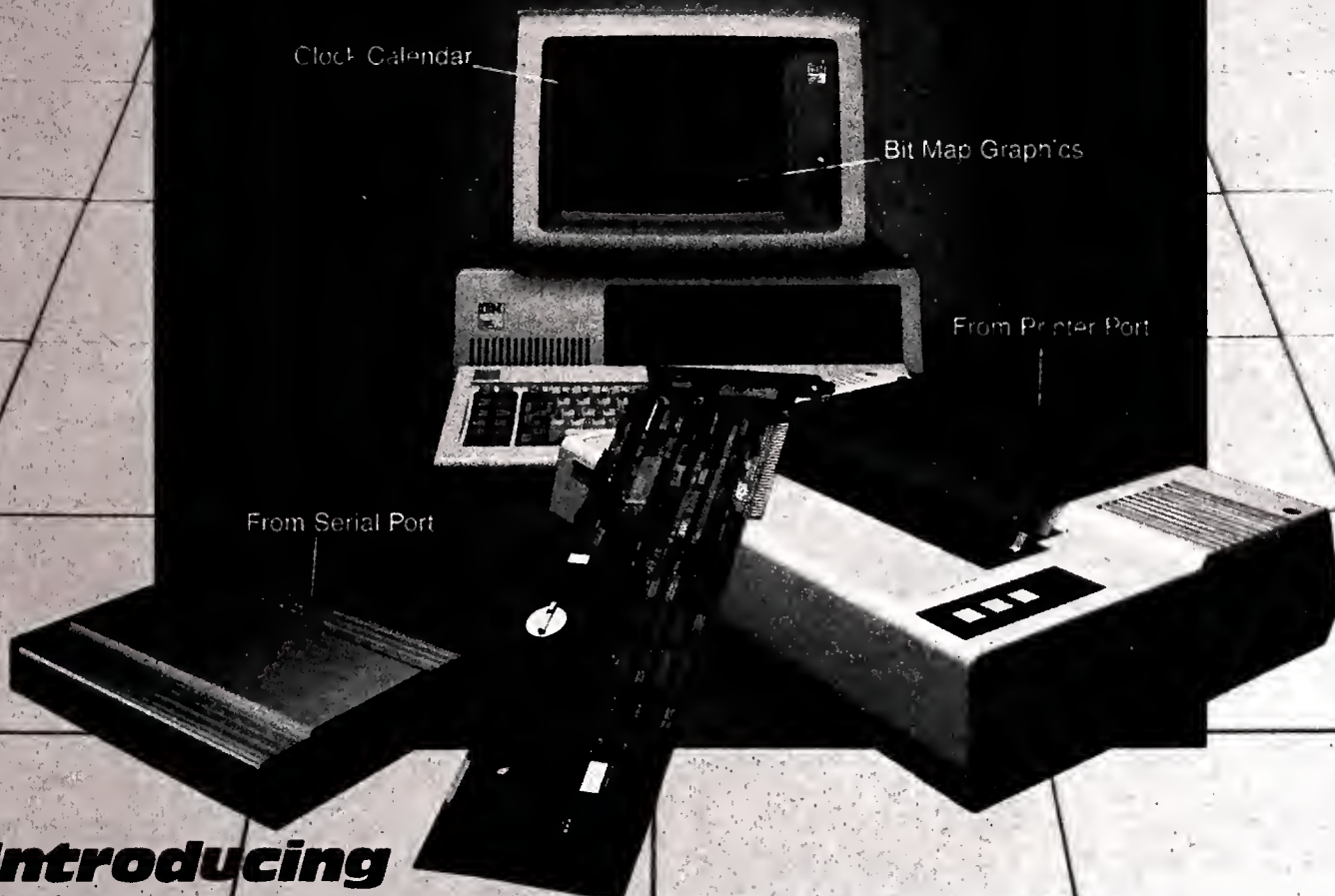
of the MIS department is one way to ensure that acquisition and implementation are monitored," the survey claimed.

However, the survey also noted that in all categories of retailers, MIS approval for word processing equipment purchase and installation is required less often than for

microcomputers.

"This may be an indication that microcomputers are considered an extension of the management information system, while word processing equipment is considered part of the office services, not necessarily under the control of the MIS department," the survey concluded.

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| ACCOUNTING | JACCT110 | 3 | 31.32 | 10.44 | 11372 | 3791 |
| | JACCT210 | 7 | 38.97 | 5.57 | 34068 | 4895 |
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| | OTHERS | 25 | 113.76 | 4.55 | 56085 | 2243 |
| HUMAN RESOURCES | OTHERS | 18 | 31.00 | 1.72 | 50316 | 2795 |
| LEGAL | OTHERS | 16 | 17.00 | 1.06 | 8218 | 514 |
| MARKETING | JMKT0170 | 3 | 31.35 | 10.45 | 13557 | 4519 |
| | JMKT0200 | 9 | 145.38 | 16.15 | 159131 | 17681 |
| | JMKT0215 | 8 | 82.33 | 10.29 | 43768 | 5469 |
| | JMKT0220 | 7 | 67.01 | 9.57 | 132557 | 18906 |
| | OTHERS | 21 | 69.95 | 3.33 | 100880 | 4804 |
| PLANNING | OTHERS | 17 | 43.00 | 2.53 | 27679 | 1618 |
| PRODUCTION | JPROD200 | 12 | 80.47 | 6.71 | 107271 | 8939 |
| | JPROD500 | 7 | 170.00 | 24.29 | 89020 | 12717 |
| | JPROD650 | 4 | 56.35 | 14.09 | 91561 | 22890 |
| | OTHERS | 24 | 142.18 | 5.92 | 106352 | 4515 |
| SYSTEMS | JSYS025 | 4 | 38.47 | 9.62 | 22519 | 5630 |
| | JSYS620 | 4 | 24.62 | 6.15 | 39212 | 9803 |
| | JSYS700 | 4 | 47.36 | 11.84 | 41780 | 10445 |
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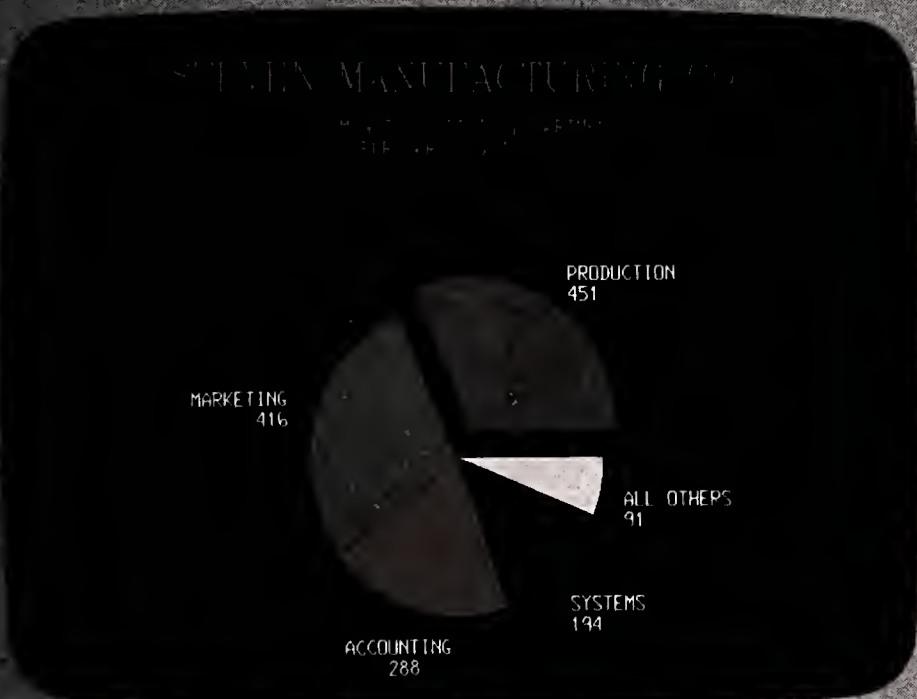


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NEWS

IRS chief defends use of mailing lists in matching

By Mitch Betts

CW Washington Bureau

WASHINGTON, D.C. — The chief of the Internal Revenue Service recently defended the agency's use of commercial mailing lists in an experimental computer matching program designed to catch citizens who fail to file tax returns.

IRS Commissioner Roscoe L. Egger Jr. fielded pointed questions at Senate subcommittee hearings from Sen. William S. Cohen (R-Maine), who asked whether IRS use of commercial marketing data bases could ultimately create an Orwellian "lifestyle profile" of private citizens.

Egger acknowledged that such a

'Our desire for efficiency and our fascination with technology should not, however, obscure the very real threat that the massive transfer of sensitive data poses for the individual rights of privacy.'

— U.S. Sen. William Cohen (R-Maine)

profile could be generated from the commercial data bases, but added the IRS would not, and does not need to, create a profile data base. "It would be a tremendous use of resources in an inefficient way — unless you have reason to believe that the citizen is defrauding the government," Egger said.

Egger said he sees no legitimate criticism for using the marketing lists, which are based on publicly available information. "If this public information can be used to sell everything from aluminum siding to magazine subscriptions, why shouldn't it be available to find tax cheats as well?"

According to the IRS chief, income data in the commercial marketing lists will identify persons with annual income above \$10,000 and then will be matched with IRS files to identify so-called "nonfilers."

Cohen said he recognized that use of the private lists for computer matching will enhance the agency's efficiency, but "our desire for efficiency and our fascination with technology should not, however, obscure the very real threat that the massive transfer of sensitive data poses for the individual rights of privacy."

Testimony by the Direct Marketing Association, Inc. (DMA) showed that mail-order houses are opposed to the IRS using the mailing lists, on grounds that consumers may resist marketing surveys and mailing lists if they fear that the private information will be turned over to the IRS. Consumers "will simply perceive that the Internal Revenue Service is using mailing lists to track people down and, in the minds of many, to harass them," a DMA spokesman said.

At the hearings, the American Civil Liberties Union reiterated its opposition to all forms of computer matching and said the government should not deviate from the principle that data should only be used for the purpose for which it was collected. It urged a federal oversight panel to handle such privacy issues.

Too many exceptions

On another privacy matter, Sen. Cohen and IRS chief Egger both expressed concern that Congress may be creating too many exceptions to the Tax Reform Act of 1976, the law requiring the IRS to keep tax records confidential. They cited as examples the recent congressional directives requiring the IRS to share computerized tax data with federal narcotics agents and government agencies investigating student-loan defaults.

Cohen noted that a tax law now pending in a House-Senate conference committee would create a new exception by permitting computer matches of IRS tax data with federal and state welfare rolls in an effort to fight welfare fraud. "It is one of the largest computer matches ever permitted by the Congress," he said.

Donald C. Alexander, a subcommittee witness who was IRS commissioner from 1973 to 1977, said he has counted 29 exceptions to the 1976 IRS confidentiality law. "I think that's a few too many. . . . The tax system is carrying too much baggage," Alexander said. He urged Congress to reduce the exceptions, beginning with the welfare exception now pending in Congress.

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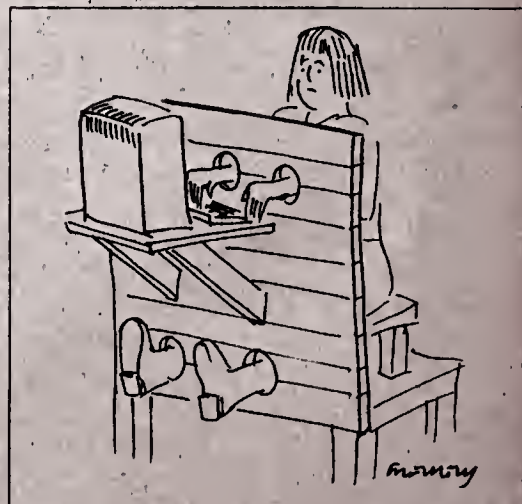
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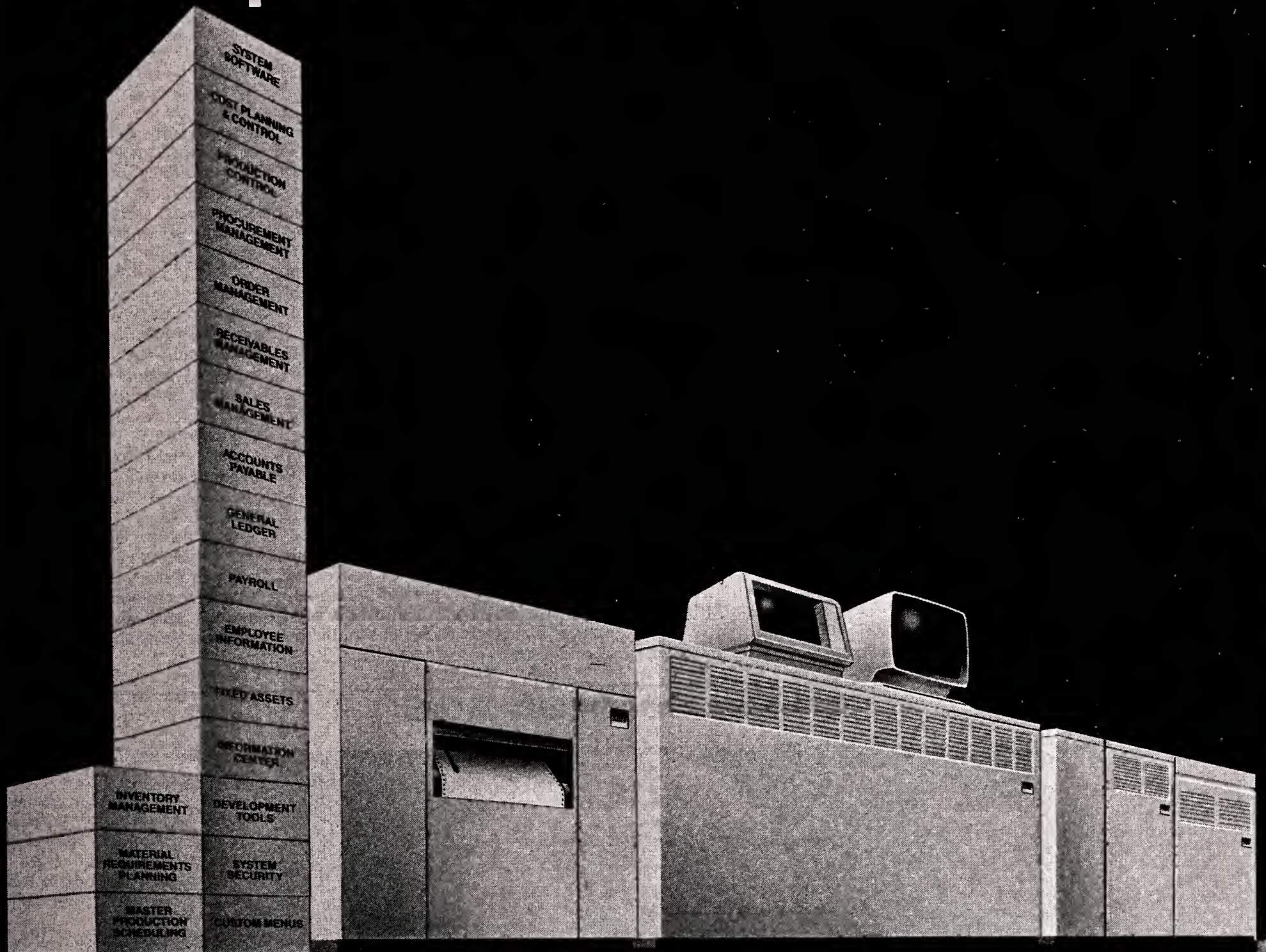
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NEWS

Scientist cites computerization for sociological rule changes



CW AT IMPACT-DC

By Tom Henkel
CW Staff

WASHINGTON, D.C. — Not only has computerization had a dramatic impact on society, but it has also changed some of the fundamental sociological rules by which man has lived for years, according to Dr. Daniel Bell, who is a Henry Ford II Professor of Social Science at Harvard University.

Speaking here at the recent International Society of Wang Users Impact-DC conference, Bell told roughly 500 users of Wang Laboratories, Inc. systems that the business community has perhaps undergone the most dramatic changes as a result of computerization.

For example, he observed, not too long ago the concept of a marketplace was, in fact, a geographical location. Now, there are few actual places of business remaining; instead, the marketplace has become an ambiguity, a sort of network of companies offering products.

Because of the changing idea of a marketplace, many businesses have changed their strategies in order to adapt. For example, large companies

are moving from the centers of major cities to the outskirts.

Furthermore, Bell said, the rules that make certain cities popular are also changing. Virtually all the major cities that developed in the past were built near what is perhaps the greatest transportation system, water. Now, with computer systems and other modern advancements like air travel, the need to build cities near water is no longer critical.

Noting that the U.S. and much of Europe are moving into a postindustrial society, Bell pointed out that much of the world is changing to a service-oriented society. Especially in computer-based markets, that service orientation will mean more jobs devoted to providing and moving information.

In the switch to an information-oriented society, Bell said, companies must refocus their priorities. The Harvard sociologist noted that companies that manufacture a product can stockpile completed units, but a business involved with providing information cannot stockpile time-dependent data.

Lastly, Bell noted that computerization has led some firms to diversification into unique businesses. For example, Boston's State Street Bank has entered an agreement with the city of Boston to collect parking fines on a contractual basis.

Realizing OA benefits requires a work redistribution, speaker says



CW AT IMPACT-DC

WASHINGTON, D.C. — The key benefit of office automation is a time savings for highly paid professional and service employees in a corporation. But that benefit does not come automatically with computerization, Dr. Victor Berlin, a vice-president with General Communication, Inc., recently told attendees at the Impact-DC conference, which was sponsored here by the International Society of Wang Users.

Professionals who switch from a manual to a computerized system and perform the same redundant functions as they did before are probably not using their time as they should, Berlin said. He maintained that delegation is the key to implementing a successful office automation system.

That delegation process should take several forms, according to Berlin.

Looking at the environment

For example, managers should take a hard look at various aspects of the office environment: evaluate the types of jobs each person performs, take a look at the types of people necessary to perform those jobs and ana-

lyze the computer system and its capabilities.

The next step is to determine which office tasks can be taken away from professionals and given to less highly paid clerical workers. Typical tasks that can be offloaded include data entry, data searches and data retrieval.

Noting that roughly 20% of a professional's tasks take up most of his time, Berlin cautioned that simply delegating those tasks is not always possible. The office manager must also evaluate those tasks to determine whether the clerical staff can actually perform them.

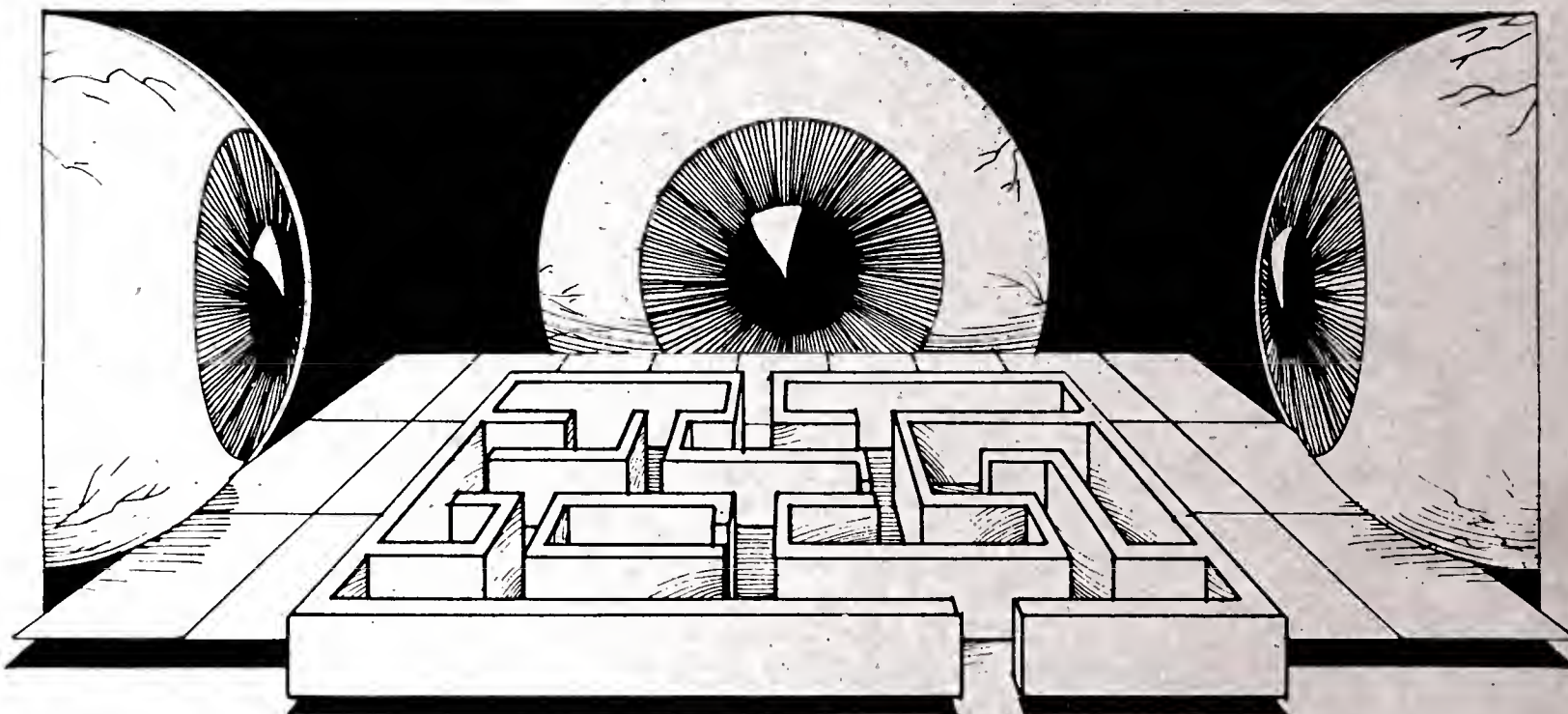
Determining costs

The manager must also figure out how much it will cost to implement a new way of producing office work. How much, for instance, will it cost to develop specialized applications and train personnel to perform duties that were previously done by skilled professionals?

Berlin said that, often, office automation systems wind up being used by employees as glorified electric typewriters.

Most companies can get more out of their office automation systems if managers study the environment to determine new areas where computer systems and word processing systems can be used.

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NEWS

Trio of satisfied multivendor users addresses meet

Enhancement of office functions, IBM compatibility cited as selection criteria



CW AT IMPACT-DC

By Tom Henkel
CW Staff

WASHINGTON, D.C. — Three different users' need to provide office services while coexisting with IBM mainframes was the driving force behind their choice of systems from the same vendor.

The three — Dick Raybould, MIS director with the state of Utah; Jack Nelson, vice-president of MIS with Riggs Bank here; and Ern Reynolds, a special assistant for information resources with the U.S. Department of Health and Human Services — told attendees of the recent Impact-DC conference here, sponsored by the International Society of Wang Users, why they selected Wang Laboratories, Inc. systems.

All three concluded the Wang systems were purchased out of a need to provide users with more office-oriented functions.

Utah's search

Back in 1979, the state of Utah was looking for a system that offered word processing capabilities plus the ability to link to a central data base managed by a series of IBM 370-era mainframes.

In addition, the state's system had to be compatible with more than 1,000 IBM 3270-type terminals and IBM-type printers, Raybould recalled.

The state wound up purchasing approximately 40 Wang VS 100 processors, which are currently distributed throughout the state. The systems are used to send electronic mail and other intradepartmental information via Wang's VS Express software.

In addition, Raybould said, the Wang VS 100 systems give managers the ability to perform budgeting and planning functions.

Riggs Bank's criteria

Riggs Bank needed an office system that could interact with its IBM 3033 mainframes and 8100 distributed processing systems. The bank installed a VS 100 with 800M bytes of disk storage. The system is used to provide the bank's managers with spreadsheet and word processing capabilities.

Bank personnel also use the system for some data processing functions, such as securities movement,

trust repayments, money market repayments and security portfolio valuation.

The bank has ordered a second VS 100 processor, identical to the original, and plans to add decision support capabilities and promote more end-user computing by using the combined systems.

Federal department gets link

The Department of Health and Human Services is using 17 Wang VS 80 processors to link its central DP site here with 10 regional offices. The systems are used primarily to create

and transport reports and other documents created either in the Washington, D.C., central office or in the regional offices located in Seattle, San Francisco, Dallas, Atlanta, Boston, Philadelphia, Denver, New York and Kansas City, Mo. The systems can also be used to interact with the department's IBM 4331 mid-range processor in Washington, D.C.

Using Wang's Mailway electronic mail package, Reynolds said, the Wang systems have eliminated effort in the regional offices and have greatly reduced the time lost by shuttling printed documents from one de-

partment to another.

For example, Reynolds said, the system is used to develop the briefing books used by the president and vice-president. The briefing books outline key facts and figures for the president and vice-president when they are planning a speech or dealing in health and human services issues that involve one of the regional offices.

Before installing the system, the regional offices would gather information and send it to Washington, D.C., where it would be included in a report.

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NEWS

Government urges agencies to adopt security measures

By Bryan Wilkins
CW Washington Bureau

WASHINGTON, D.C. — With approximately 25,000 mainframes currently in use to support its operations and a projected addition of 500,000 personal computers in the next few years, the U.S. government recently gave a crash course to implement computer security protections.

Earlier this month, the assistant secretaries of management and inspector generals from 13 departments and more than a dozen agencies were called to a day-long seminar to learn the latest in state-of-the-art techniques to implement computer security. As an example of one department's efforts to ensure the security of data transmissions, the Department of the Treasury recently decided to require all electronic payments made by the government to incorporate an encryption standard that will be phased in over the next four years.

At the seminar, the independent agencies and department officials were encouraged by one computer security expert to press the National Security Agency (NSA) — which has traditionally been seen as an arm of the Department of Defense, but is in fact responsible for all national security — for assistance in assessing the threats to departments' computer systems.

Raymond Tate, a former director of communications security at NSA, told the seminar, "You have got to study the threat before you buy the fixes. You have to determine who is likely to benefit from the data they are trying to obtain."

Security system included in installation

Tate, now head of Raymond Tate Associates, Inc. in Silver Spring, Md., said that with the coming spread of personal computer links to mainframes, a security system will have to be included in the software and communications when they are installed. He estimated that it will cost approximately \$3,000 per computer workstation to implement a computer security system that will deter unauthorized penetration.

The Data Encryption Standard developed by the National Bureau of Standards was recommended for use by all experts addressing the session. "Passwords and software security don't work, only cryptography will," asserted Stephen W. Leibholz, president of Analytics, Inc., a firm providing communications security in hardware, access control and authentication now in use by about 300 banks.

The department managers and inspector generals who attended the seminar responded with con-

cerns that their budgets are not sufficient to build in a security system that would be adequate. Determining what is an acceptable level of risk by implementing a specific level of computer security within a tight budget is the primary task facing the line managers, not the inspector generals or department administrators, according to Richard H. Shriver, assistant secretary of the treasury for Electronic Systems and Information Technology.

Shriver said that the vulnerability of the federal government's computer systems can be seen in the billions of dollars that are transferred via over-the-air microwave transmissions and which conceivably could be intercepted with \$10,000 worth of electronic equipment and assembled with the proper know-how. "We annually collect \$857 billion. Daily, we have a cash outflow of \$8 billion, which is nothing compared [with] the average \$800 billion that moves daily between the banks in the U.S.," Shriver said to emphasize the stakes that are involved. He suggested that the private sector is just as unaware of the "seriousness of the situation" as is the federal government.

Richard P. Kusserow, inspector general for the Department of Health and Human Services, said, "If we don't get on top of this problem, we probably never will."

Volunteers supply on-line information to forecast weather trends

By Edward Warner
CW Staff

CHAMPAIGN, Ill. — Each day, 36 volunteer weather observers across Illinois call a computer at the University of Illinois here and, using their Touch-Tone phone's keypad, punch in weather data on the temperature and precipitation in their area.

The reporting system, called the Climate Assistance Service (Class), puts on-line a system of weather data collection still done on a monthly basis in all other states. But while most other states can turn to the daily local re-

ports of National Weather Service airport reporting stations, Illinois doesn't have such a station south of Springfield.

Even if it did, such stations do not report extremely small amounts of precipitation, according to John Vogel, head of the climate information unit of the Illinois State Water Survey.

Established in January by the Water Survey, the Class program provides up-to-date data that Water Survey scientists use to issue seven-, 30- and 90-day projections on trends in the state's weather.

The projections, called probability outlooks, tell of trends in temperature and precipitation and of the likelihood of droughts or floods, important issues in this agricultural state.

Voice terminal

When a volunteer calls Class, he is connected with a custom-designed voice-synthesizing terminal to which he gives his personal code number. The terminal then asks the caller to provide his readings, and the caller punches in readings on the mean, maximum and minimum temperature, precipitation and (if any) snowfall and current snow depth.

As each item of data is received, the system's electronic voice reads the number back to the volunteer. When a volunteer gives illogical information — a daily low of 50 F and a current temperature of 45 F, for example, the computer prompts the caller for an explanation.

Data from the volunteers is combined with daily reports from the weather service and from 22 Illinois agricultural climatology stations and entered into the system's Altos Computer Systems, Inc. Altos 8600 microcomputer. The processor's 40M-byte disk storage system houses Illinois weather data going back to the turn of the century. Water Survey meteorologists compare the present conditions with those of the past to see if trends are developing.

Class system forecasts are relied on by farmers, who use them to prepare for irrigation, planting and pest control, and by some state government agencies, which can

connect to the system's computer via telephone lines. The state's Division of Water Resources, for example, uses Class projections in its work of controlling the state's system of dams.

Class is also being used by the state's Department of Energy and Natural Resources, Vogel said, to develop projections for the state's short-term needs for energy, for heating and cooling.

Before the on-line reporting system came into use early this year, Illinois' 225 to 250 volunteer weather observers, spread throughout

the state, would send monthly reports of daily weather conditions in their areas to a national center, where the data was keypunched onto paper cards. "In most instances," Vogel said, "that data was not available [to the state] for two to three months."

"Our method," explained Wayne Wendlund, an Illinois Water Survey scientist, "puts [the data] in usable form the same day as the observations are made, and the data is of high quality because the computer checks it with the observer."

INTEGRATED SYSTEMS

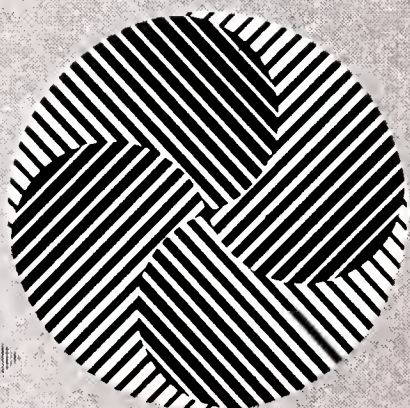
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NEWS

France eager to increase robot exports to the U.S.

By Edward Warner
CW Staff

DETROIT — French Ambassador to the U.S. Bernard Vernier-Palliez made a sales pitch for his country's robots and discussed a new program of French government aid to that nation's robotics industry at Robots 8, a robotics conference and trade show held here earlier this month.

Speaking at a press conference, Vernier-Palliez said his nation "has been one of the pioneers of robotics" and that it makes robots as much for export as for internal use. France needs exports to offset its balance of payments deficit, caused by heavy reliance on imported energy sources, he said.

The ambassador sees "the biggest potential for growth"

in robot sales in the U.S. and hinted that he would like to see the spread of U.S.-French robot-making ventures such as that of French robot maker Sietam, which owns 30% of a U.S. robot manufacturer.

Also at that news conference, the French government discussed its Automated Autonomous Robots program,

under which it is providing aid to several robotics research ventures by French manufacturers. Those ventures will produce robots for use in forestry, public transportation and the nuclear energy industry, as well as a robot, under development by Renault, for household cleaning and other chores, ex-

plained Michel Parent, who heads the project.

Parent said his government's aid involves "very little spending [and] only for research activities." Fruits of the research are not expected for five years, he noted.

Venier-Palliez, whose government relies on strong labor support, claimed that

French "labor unions are not at all opposed to the use of robotics [because they know that] if we want to stay competitive, we must [use] robotics."

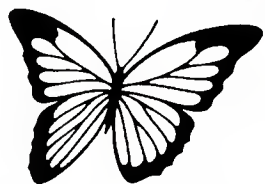
Eight French firms, including Afma Robots and Industry & Technology of Machine Intelligence, exhibited at the conference.

Study: IBM micro leads

PARIS — Although the penetration of the IBM Personal Computer into various countries of Europe has grown at different rates, it is now the undisputed market leader in nearly all countries, according to a study by Intelligent Electronics Europe, a market research firm located here.

The study, titled "The European IBM PC Users," maintains that in 1983, 60,000 units were sold in Europe, and that in 1984, a similar volume will have been sold by the end of June, resulting in an installed European base of over 200,000 units by year's end.

The study is available for \$750 from Intelligent Electronics' U.S. representative, IPI, at 164 Pecora Way, Portola Valley, Calif. 94025.



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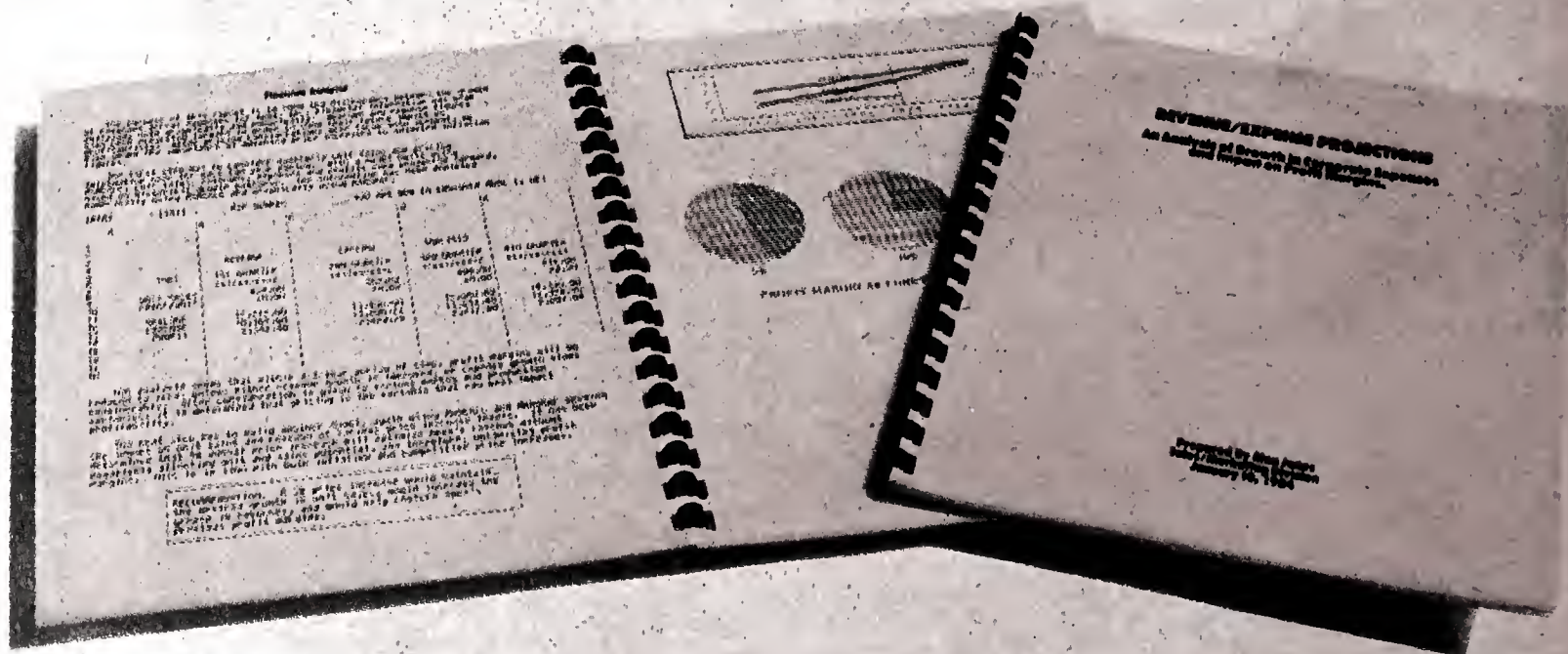


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NEWS



**INTERNATIONAL
REPORT**
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AUSTRALIA

CANBERRA — The Federal Department of Finance will create a nationwide Systems Network Architecture here that will extend to the level of data entry. The net-

work will be composed of Nixdorf Computer Corp.'s computers and Australian communications hardware. According to sources here, neither IBM nor Facom Ltd. bid for this multimillion-dollar government configuration, which reportedly will be used to front-end the department's Amdahl Corp. 470V/8 mainframe.

BRISBANE — Overseas companies are supplying

spare parts to their Australian subsidiaries at highly inflated prices, according to Greg Loudoun, the managing director of Computer Maintenance of Australia Pty. Ltd. "We bought a computer spare part for \$77 recently from a U.S. manufacturer when the in-house price of the same part ... is \$11 for U.S. companies," he reported. Loudoun contends that the federal government should intervene.

CHINA

BEIJING — The Administration of the Computer Industry and the Ministry of Electronic Industry has established a modern production line of disk drives and floppy drives with the help of France's Electrical and General Corp. The factory will assemble the French company's ZPC-204 disk drives and 8-in. ZPC-3 floppy

drives. This production line is said to represent China's first peripheral manufacturing plant.

FRANCE

PARIS — Bull Sems and Commissariat l'Energie Atomique are reportedly joining forces on a joint venture dedicated to new disk technologies such as thin film heads, vertical recording techniques and small (3½-in.) disk formats. The name of the company will be Micromag.

JAPAN

TOKYO — Fujitsu Ltd. and the UK's ICL Ltd. have extended their collaborative research and development agreement until the end of 1991. The agreement provides ICL with access to Fujitsu's advanced hardware technology for ICL's new generation of mainframes, which will be introduced over the next 18 months, according to industry sources.

NETHERLANDS

AMSTERDAM — General Electric Information Services Co. (Geisco), provider of computer and data communications services via its Mark III Service network of 700 worldwide locations, will market locally Epson Corp.'s PX-8 lap computer for use

See **DIGEST** page 32

MANAGE USER SERIES

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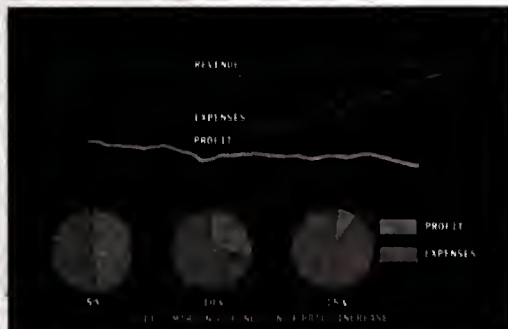
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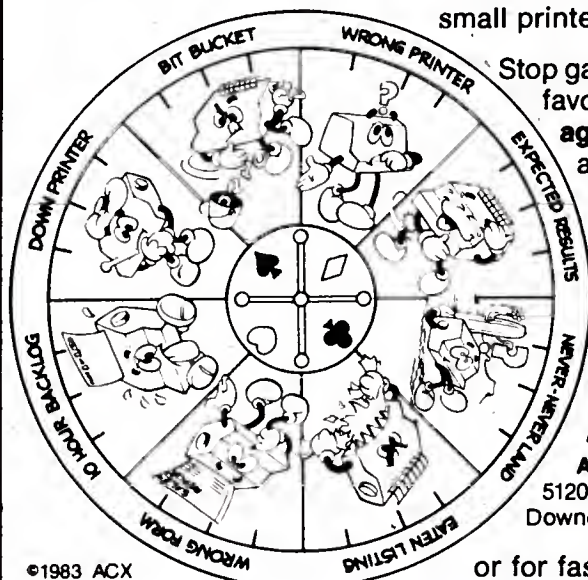
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NEWS

DIGEST from page 31

with their service. The system is being sold by Geisco with built-in software including Micropro International Corp.'s Wordstar and communications packages. Geisco had been selling the IBM Personal Computer for this application, but has now extended its range to include the Japanese computer. Geisco is offering to let Dutch journalists try out the Epsoms when covering the upcoming Olympic Games in Los Angeles.

efficiency of its three-year-old predecessor, the SM-4. Both machines, produced here by government engineers, are members of a series of compatible small systems being produced in the socialist countries. The systems are said to be controlling the world's largest furnace at Krivoi Rog, a radio telescope in Caucasus, a giant rolling mill at Zhdanov and several other sites here and in Finland, Sweden and Germany.

TAIWAN

TAIPEI — Taiwan's exports of 5¼-in. floppy disk drives jumped over 100% during the first quarter this year, according to recently released customs statistics. From January through March 1984, Taiwan's 20 manufacturers exported a total of 134,000 units, with a total market value estimated at \$13.2 million. The majority of the floppy disk drives were compatible with Apple Computer, Inc.'s Apple II microcomputer.

TAIPEI — Hewlett-Packard Co. and Taiwan's Nan Ya Plastics are said to be building one of the world's most highly automated multilayer printed-circuit board factories here. The \$20 million plant is slated to be completed by 1985. It will draw heavily upon computer-aided design and manufacturing techniques and will be capable of producing up to 3,000 custom orders simultaneously, sources said.

WEST GERMANY

MUNICH — The worldwide chip shortage spawned another incident when thieves broke into the building of EBV Elektronik GmbH and stole about 100,000 integrated circuits. EBV Business Manager Peter Guertler said the criminals could make a "good business" with the stolen products, having depleted his company of 10% of its supply.

FRANKFURT — In another attempt to stimulate lagging Personal Computer sales here, IBM has taken over the marketing and distribution of the machines. The company reportedly is offering third-party software — from a small firm called HS Hamburger Softwarehaus GmbH — under the IBM brand name.

FRANKFURT — The German data processing and office automation industry is enjoying renewed momentum, according to the Association of German Machine and Plant Engineering. The Association reported that the information technology industry recorded domestic production increases of 17% in 1983, while domestic computer installations leapt 25% during the same period.

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NEWS

Computer-garnered health data keeps Soviet workers productive

ZAPOROZHYE, USSR — When workers at a Russian automobile factory here need a medical checkup, they find themselves sitting in front of a CRT terminal answering computer-generated questions.

The system, with more than 2,000 questions in its memory, is being used by the Kommunar Motor Works for routine diagnostic work and to save the time of doctors and patients — and loss of work days — according to a release issued by the press office of the Soviet Embassy in Canada.

Soviet workers in factory environments normally undergo preventive medical examinations. These checkups, however, were generating an enormous amount of extra work at clinics, with the routine registration process and questions often consuming more time than the actual doctor's examination. The paperwork was monotonous and cumbersome for the doctors and clinicians, sometimes hampering proper assessment of data obtained and causing them to make mistakes in diagnosis.

Further, without the aid of the computer, the average factory worker would spend five days going through a typical medical examination. This added up to a yearly loss of 500 working days per 100 workers.

Then came the invention of the diagnostic computer by engineers and health services staff at the Kommunar Motor Works. The system is said to be based on Soviet and foreign research in this area and includes some unique characteristics, according to Alexander Sitnik, leader of the project's research team.

Comparisons between the checkup work being done at the factory diag-

nostic center and a nearby hospital tell the rest of the story: The factory center has a staff of 40, in a building of approximately 400 meters. The hospital clinic is staffed by 400 people, in a center that spans 5,000 sq meters. The hospital clinic handles 500 patients per day, while the factory center deals with 1,000 patients in the same time frame.

What do the patients think of the computer diagnostic system? Initial research indicates that patients overwhelmingly prefer answering the computer-generated questions, claiming it is less embarrassing.

AI machine seen helper, not rival

KIEV, USSR — Creation of an artificial intelligent machine, still a fairly abstract concept, will provide mankind with a helper rather than a rival, according to Victor Glushkov, director of the Ukrainian Institute of Cybernetics here.

According to a release issued by the press office of the Soviet Embassy in Canada, Glushkov, a leading figure in the computer industry here, disputes the notion that computers can be no more than rapid calculating machines, blindly executing instructions programmed by their human masters.

The Ukrainian Institute of Cybernetics presently has a robot that can lift objects from the floor, arrange them in a predetermined order and assemble and store a standard unit, Glushkov reported. The same robot can recognize 500 words, he added.

Some of the systems under development at the institute are called recursive structures, made up of thousands of microprocessors whose relationships are said to be constantly changing in the course of the job. The structure readjusts itself to fit the task and actually tries to complete the task faster, Glushkov maintained.

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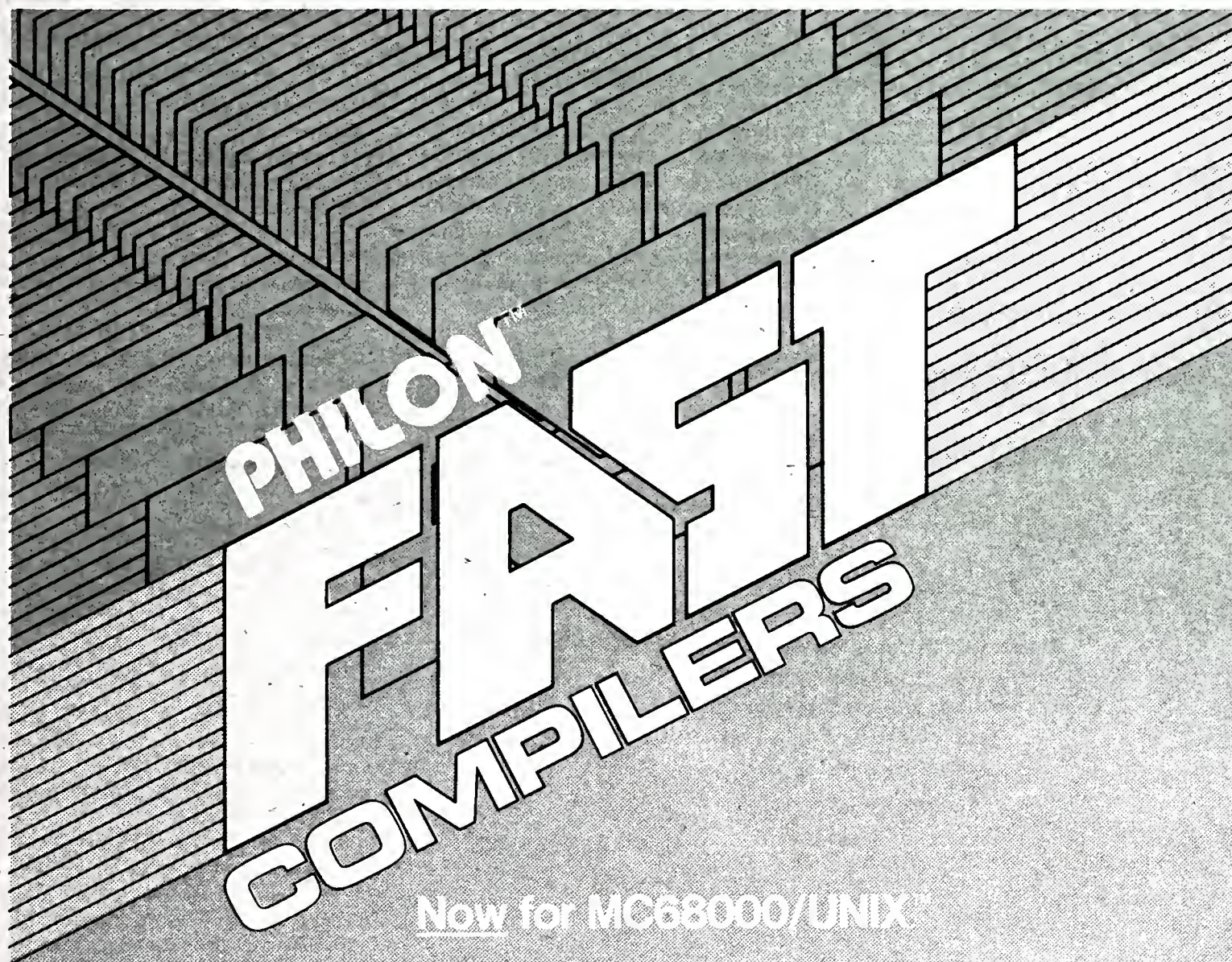
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NEWS

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Abstracts should be submitted as soon as possible to Stuart Renes, Department 477, AT&T Technologies, 3000 Skyline Drive, Mesquite, Texas 75149.

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technological innovation; development and evaluation of user interfaces; evolution of information systems; national policies related to information technology; strategic uses of information systems.

Papers should be no longer than 25 pages, including abstract, illustrations, tables and references. Three copies should be sent to the Program Chairmen, Professors John L. King and Kenneth L. Kraemer, Department of Information and Computer Science, University of California at Irvine, Irvine, Calif. 92717.



CALENDAR

WEEK OF AUG. 23

AUGUST 26-30, BOSTON — Information Center Conference & Exposition. Contact: Loretta Wolman, Warren/Weingarten Publications, 38 Chauncy St., Boston, Mass. 02111.

AUGUST 27-28, LOS ANGELES — Vsam OS & DOS Performance and Tuning. Contact: Goal Systems International, Inc., 5455 N. High St., Columbus, Ohio 43214

AUGUST 27-29, LOS ANGELES — Information Center. Contact: Software Institute of America, 8 Windsor St., Andover, Mass. 01810.

AUGUST 27-30, NEW YORK — CICS Debugging. Contact: Sysed, Inc., One Park Ave., New York, N.Y. 10016.

AUGUST 27-30, SAN DIEGO — The 11th Annual North American Data General Users Group Conference. Contact: Dolores Risi, Users Group Clerk, Data General Corp., 4400 Computer Drive, Westboro, Mass. 01580.

AUGUST 27-31, BOSTON — Structured Design and Programming Workshop. Contact: Yourdon, Inc., 1133 Ave. of the Americas, New York, N.Y. 10036.

AUGUST 27-31, SINGAPORE — The 10th International Conference on Very Large Data Bases. Contact: Dr. Gerald A. Wilson, Advanced Information & Decision Systems, 201 San Antonio Circle, Mountain View, Calif. 94040.

AUGUST 29-31, LOS ANGELES — CICS/VS Internals for Systems Programmers. Contact: Goal Systems International, Inc., 5455 N. High St., Columbus, Ohio 43214

Itca selects new president

MADISON, Wis. — Richard H. Jackson III, director of corporate communications for Aetna Life & Casualty Co., was elected president of the International Teleconferencing Association (Itca) during the organization's first annual meeting held here recently.

The 350-member association is composed of users, providers and consultants in the teleconferencing field.

Jackson, a former Itca director, heads the teleconferencing and technical communications section of Aetna.

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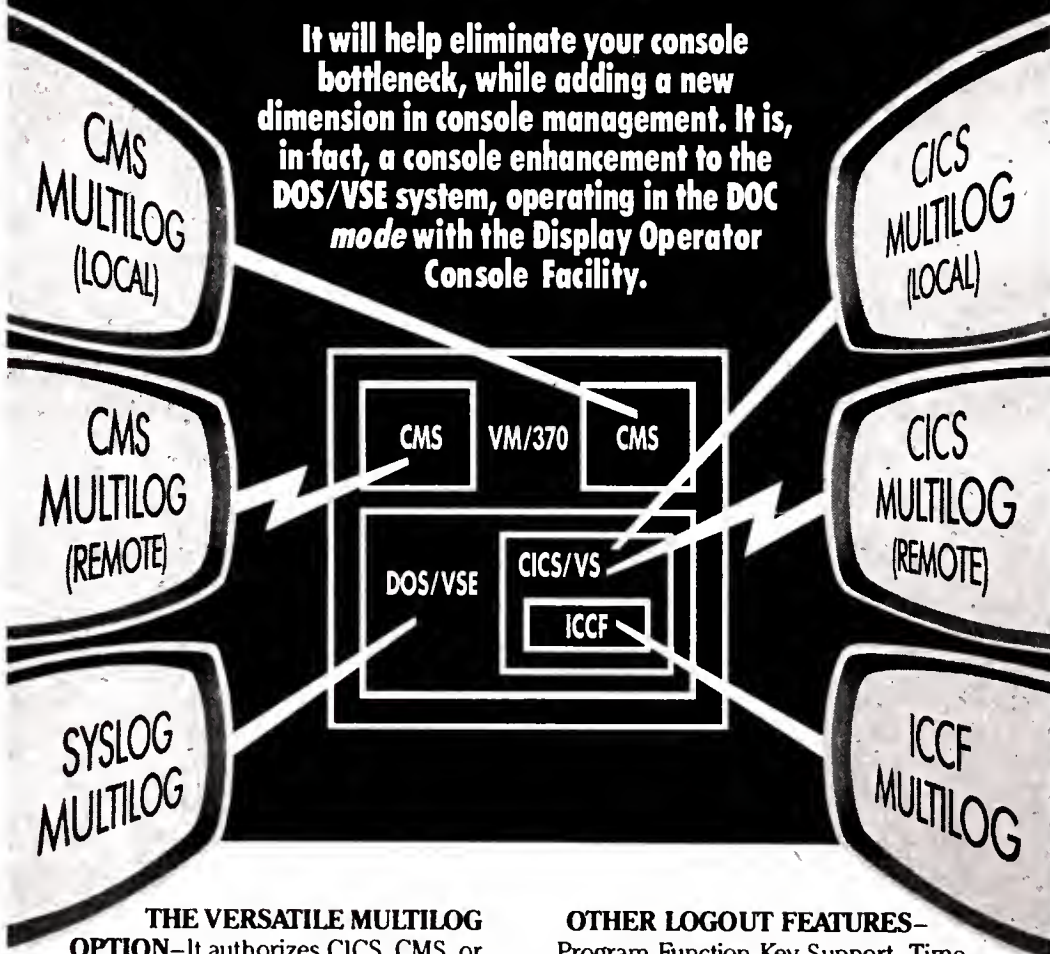
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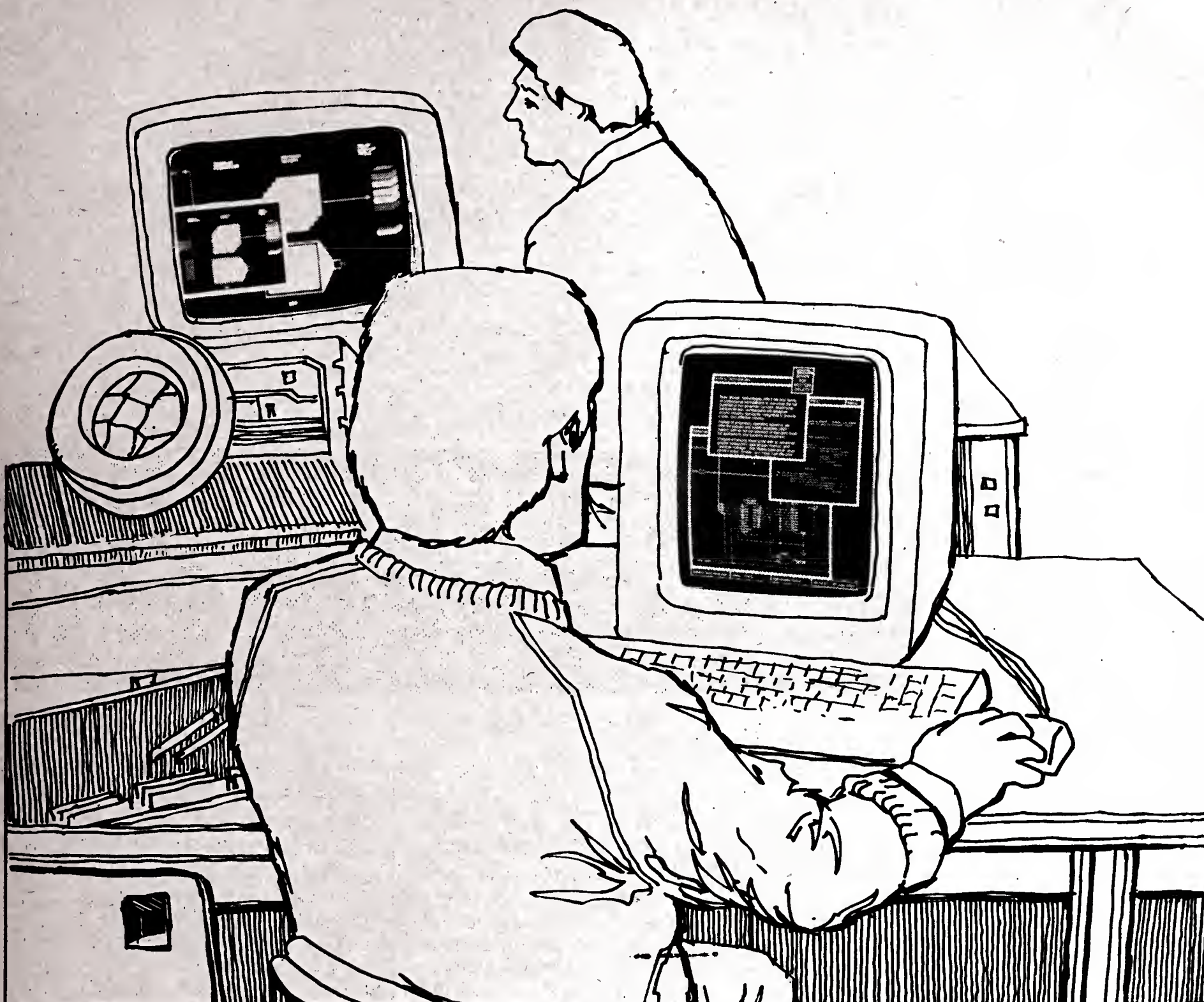
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IN DEPTH



The 32-bit flexible workstation: one supplier's answer for users

By Col Rada

Is the workstation too powerful? The answer is yes. A stand-alone office system running word processing would be grossly undertasked. But the cost of developing this performance is shared by the thousands of workstations based on a single generic design.

End users want diversified local processing. Microprocessor-based computer suppliers want to cut development and maintenance costs and slash the time to market. These two demands are driving the development of multifunctional workstations.

Typical research and development costs for a new and unique microprocessor-based system range from one to \$10 million. The average time to market, assuming the organization is in place and the hardware and software environments are stable, is 18 months. This time can easily double if there are organizational or technical problems.

The best way for suppliers to cut R&D costs and shorten the time to market is to reduce the number of fundamentally new products they must design. Rather than design a unique personal computer, engineering workstation, robotic controller, back-end processor or intelligent terminal, a supplier would develop a multifunctional workstation. This workstation would be tailored by software to meet the demands of different environments.

IN DEPTH/ONE SUPPLIER'S ANSWER

If a multifunctional workstation is the departure point for a design, a product could be developed for a fraction of the cost of a unique design. Time to market could be reduced to four to six months or less.

Designs based on such a multifunctional workstation would be more responsive to the marketplace than totally dedicated products, and they would be less expensive to maintain.

Maintenance can add up to 30% to the cost of a product. With a single type of system, repair procedures will be easier to learn and, as a result, technician training will be compressed. Spare parts inventories will be lowered because fewer part types will need to be stocked.

Software environment key

The multifunctional workstation will be personalized for a variety of different applications by software. In such a concept, someone — the workstation supplier, OEM, value-added retailer or end user — must install software on the workstation that gives it unique capabilities. Some software would be purchased, while others would have to be written. The multifunctional workstation manufacturer must then provide a hardware and software environment that will accommodate the widest range of applications.

A piece of software is an investment that must be preserved. It should be an asset, not a cost. To ensure that the software developed for the workstation is portable, fosters productivity and can migrate up and down, the workstation must support the most universal operating system and run high-level languages.

Unix is rapidly becoming the operating system of choice for all types of systems: personal computers, minis and mainframes. The workstation must be available with Unix installed or ported. Having the supplier port Unix to the workstation saves each vendor the expense of building and debugging unique Unix ports.

Requiring that the multifunctional workstation support Unix partially defines the hardware. For example, National Semiconductor Corp. offers Genix 32, a descendant of 4.1 Unix with Berkeley enhancements, with its Series 32000 family of CPUs and peripherals.

The minimum hardware requirements for this version of Unix consist of a 16-bit microprocessor, an interrupt control unit, timing control unit, memory management unit, 512K bytes of random-access memory, 20M bytes of disk storage and an RS-232 port.

The multifunctional workstation should support high-level languages. All evidence suggests that programming in a high-level language (for example, C or Pascal) is more productive than programming in assembly language.

Researchers have found that high-level language programmers can produce the same number of lines of code per day as assembly language programmers. Since a line of code in a high-level language usually performs a more complex operation than a line of code in assembly language, the high-level programmer is more productive. High-level language support cuts both the development cost and time to market.

The time to debug a program and the difficulty in understanding and

The basic reason for the inherent inefficiency of high-level languages when targeted to most contemporary microprocessor-based computers is that few were designed to support compilers. Most computers are built out of love, not for programmers.

maintaining it are proportional to the number of instructions. Since several assembly language instructions might be required for each high-level language statement, the saving in programming time and cost over an equivalent assembly language program are obvious.

In the past, these advantages were offset by the inefficiency of high-level languages as opposed to assembly language programs. Depending

on the compiler, the computer and the application, a compiled program might be up to 300% longer and slower than the best assembly language program. The basic reason for the inherent inefficiency of high-level languages when targeted to most contemporary microprocessor-based computers is that few were designed to support compilers. Most computers are built out of love, not for programmers.

The shortcomings of current computer architectures are largely attributable to what Glenford Myers called the semantic gap, or the gap between the concepts used in high-level languages and the concepts in the computer architecture.

The objects and operations reflected in these computer architectures are seldom related closely to the objects and operations in programming languages. This semantic gap contributes to software unreliability, performance problems, excessive program size, compiler complexity and distortions of the language. With the overwhelming software task facing developers, this gap must be closed.

Consider the following concepts in high-level languages and how these concepts are supported by most

END USERS WHO DO IT CERTAIN

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That software is Aura. In fact, Aura is the most adaptable software you can buy. With Aura, users can create their own menus to define entire sets of tasks. Stream jobs together to complete a series of operations with a single keystroke. And operate their IBM or similar personal computers without having to learn or remember a single command.

In short, Aura lets your end users do it themselves.

DATABASE CORE

Aura takes an approach that redefines the structure of personal computer software. Because its database provides central information storage from which graphs, word processing documents, and spreadsheets can be built.

In addition, when a field is added or changed, all files are automatically reformatted, without rekeying. Related graphs, documents, and spreadsheets are updated as new data is entered, changed or deleted.

The number of files and records are limited only by disk capacity. Aura supports records of up to 255 fields with 255 characters each. Each record can have up to eight indexes. And each index is built automatically in an advanced multiway tree structure.

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Aura's 3D spreadsheets offer capabilities that aren't just innovative. They're unique.

Consider that an unlimited number of Aura's 255 row by 63 column spreadsheets can be linked together at the touch of a key. And that with Aura's ZOOM feature, a user can instantly inspect the details behind any cell of information derived from any other spreadsheets.

Spreadsheets can even be created from existing database information and then turned into graphs or charts.

FREE-FORM AND BUSINESS GRAPHICS

Aura's high resolution graphics also let end users do it themselves. In fact, they can draw their own graphics interactively or call them up ready-made from a menu.

And it's easy to design everything from organizational charts to corporate logos. Because while free-form graphics are being created, the menu remains on the screen to guide the user along.

Business graphs can be generated from information in the database, a spreadsheet or directly from the keyboard. And prepared graphs and charts can reflect figures from a given point in time or from the most current information in the database or spreadsheets.

When the graphic elements are completed, one or more of them can be automatically integrated into a single page or pages of a word processing document.

IN DEPTH/ONE SUPPLIER'S ANSWER

computer architectures:

Arrays. The array is one of the most frequently used data structures in most high-level languages. Most languages provide for multidimensional arrays, perform operations on arrays and check to see that subscripts do not exceed the boundaries of the array. Most computer architectures, however, provide very limited architectural features to support any of these constructions.

Records. A record consists of a number of components (usually called fields) that can be of different data types. There is nothing in the architecture of most microprocessors that supports records.

Strings. Most high-level languages contain the concepts of fixed and variable-size strings and of string processing operations. Many micro-

For a memory management strategy truly to implement virtual memory, the user must be presented with the illusion that all of the addressable memory is available for use at any given time.

processor architectures provide no string processing instructions.

Procedures. The basic program unit in modern high-level languages is the procedure. A procedure call entails saving the state of the calling procedure, dynamically allocating and initializing local storage for the called procedure, passing arguments and executing the called procedure. Most microprocessor architectures do not support any of these operations.

Modules. Modern high-level languages use the concept of a software module to contain several procedures and data. Each module may be developed independently of all other modules and combined for final execution, reducing development cost and time, increasing design flexibility and simplifying system design. Most processors do not support the modular software concept.

The Series 32000 microprocessors attempt to address these deficiencies

in contemporary microprocessor architectures. They have made a major effort to bridge the semantic gap with this new architecture.

The microprocessor was designed to support high-level language compilers; it enables even relatively unsophisticated compilers to produce efficient code. Special addressing modes are provided to access such high-level language constructions as arrays and records, and new operators are provided that are specifically tailored for high-level languages.

National Semiconductor's requirement that the multifunctional workstation support Unix and high-level languages places some heady demands on its performance. In the past, these demands could only be met by expensive 32-bit minis.

For such a workstation to be attractive in the marketplace, it must be based on a microprocessor. A CPU built from components would be far too expensive to purchase and operate. These demands are beyond the capabilities of 8- and 16-bit microprocessors.

A full 32-bit microprocessor is required, one with a 32-bit internal and external architecture. It must also have the ability to support high-level languages, advanced operating systems and large memory spaces through demand-paged virtual memory capability.

A 32-bit external data bus will enhance performance by increasing the amount of information that can be accessed from memory in a given amount of time. The memory management architecture should be patterned after the memory management system used on a number of large machines, such as IBM's 370 series and Digital Equipment Corp.'s VAX-11.

Straining capacity

The memory requirements of typical applications today commonly strain the capacity of minis and even mainframes. Programs such as high-level language compilers or the recently enhanced version of VisiCorp's Visicalc need more than 250K bytes of main memory alone. Graphics programs can require more than a million bytes of secondary storage. In order to solve such large memory-management problems, the 32-bit microprocessor must be capable of implementing demand-paged virtual memory.

This memory strategy uses a secondary storage device, such as a hard disk, as an adjunct to the main memory. For example, a workstation in a data processing environment may need several million bytes of memory in order to run word processing, financial planning and data base management programs efficiently. Yet the workstation may have only a half-a-megabyte main memory in order to be competitive in price.

Since the system would probably include a hard disk as standard equipment, implementing virtual memory is a viable technique for expanding the memory address space. The result is that the user sees a system that performs like one with 5M bytes of main memory, for example, yet pays for only half a megabyte.

Memory illusion

It must be emphasized that for a memory management strategy truly to implement virtual memory, the

THEMSELVES HAVE A AURA.

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IN DEPTH/ONE SUPPLIER'S ANSWER

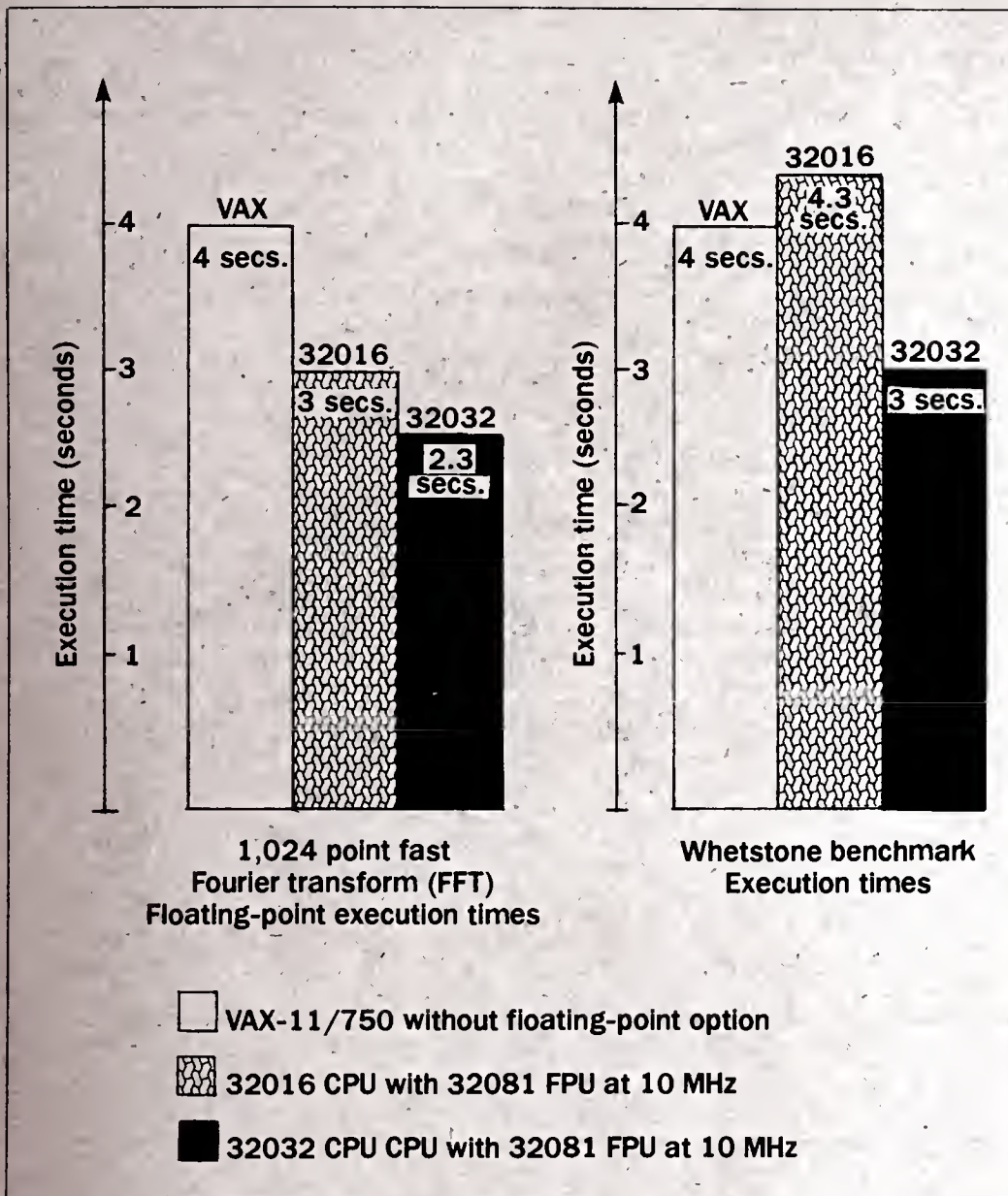


Figure 1

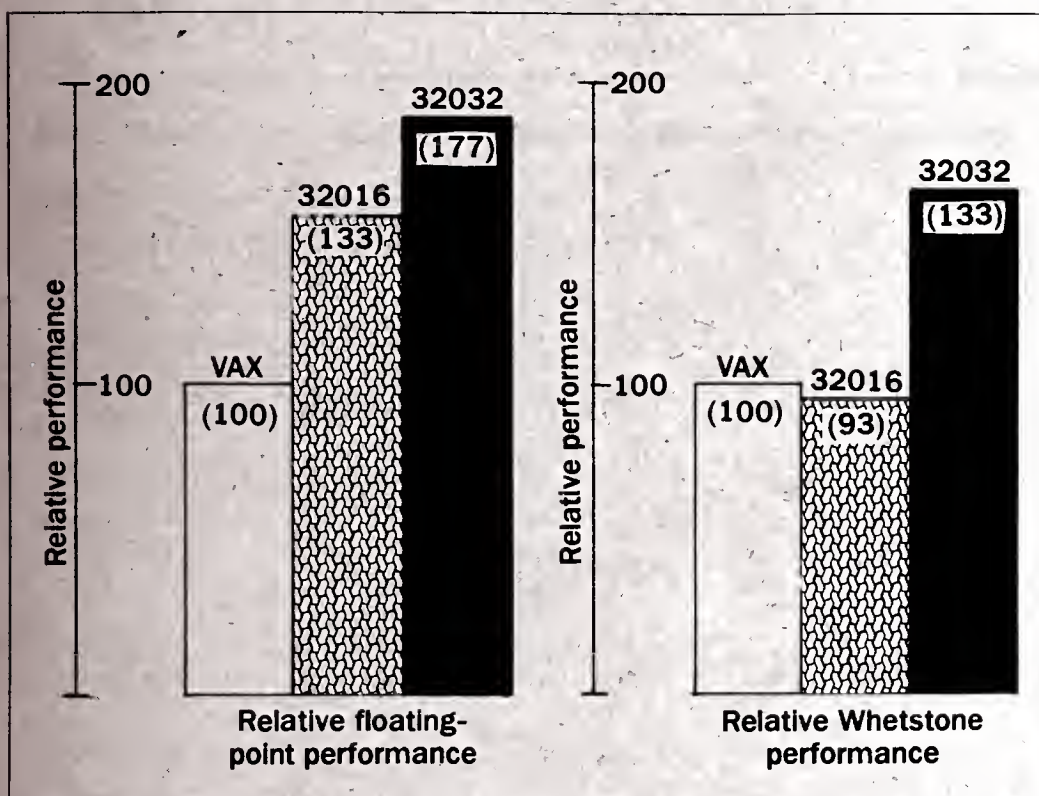


Figure 2

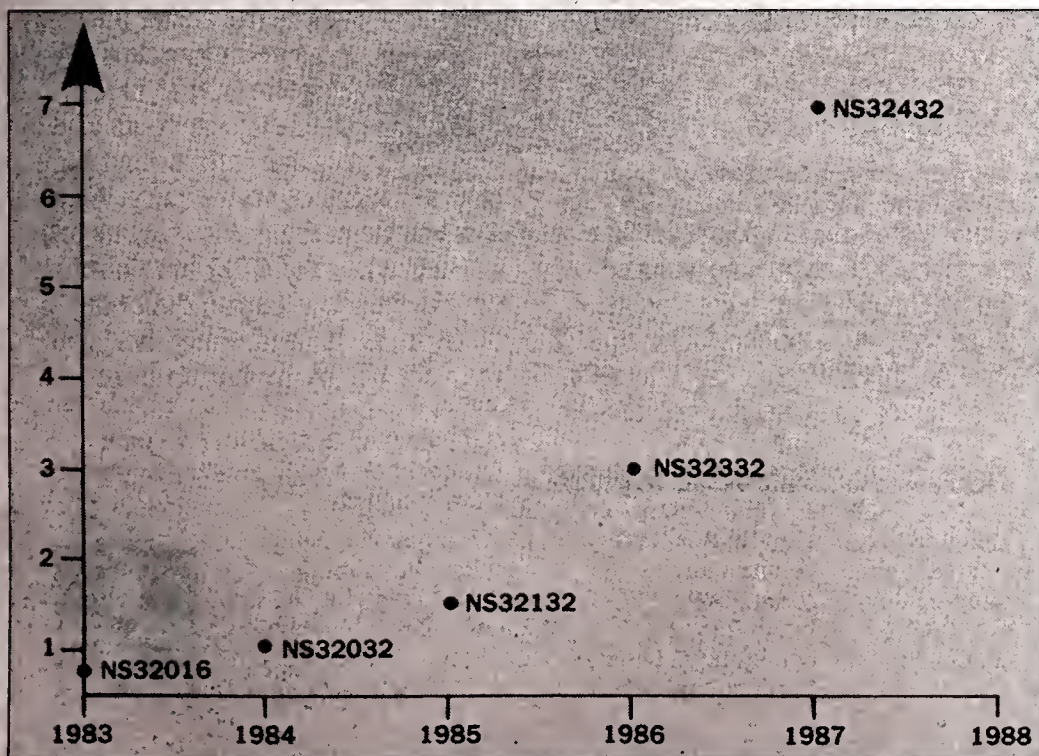


Figure 3

National Semi's answer

National Semiconductor Corp.'s 32032 microprocessor is a full 32-bit CPU with a 32-bit data bus bandwidth and 32-bit internal attributes such as 32-bit registers, a 32-bit arithmetic logic unit and 32-bit internal data paths. The processor suits the firm's multifunctional workstation by supporting high-level languages, advanced operating systems and large memory spaces through demand-paged virtual memory.

Preliminary benchmark tests indicate that the 32032 delivers minicomputer performance. On computation-intensive programs, the 32032 CPU running with the support of National Semiconductor's 32081 floating-point unit turned in a VAX-11-class performance.

To test number-crunching power, a 1,024-point Fast Fourier Transform (FFT) program and the Whetstone Benchmark were chosen. For comparison, we tested a 32016 as well as a VAX-11/750 to see how the 32032 compares with National Semiconductor's 32-bit internal/16-bit internal and a superminicomputer. The 32032 and 32016 were run at 10 MHz with no wait states. The VAX-11/750 clock rate and number of wait states are not variable.

The FFT requires a substantial

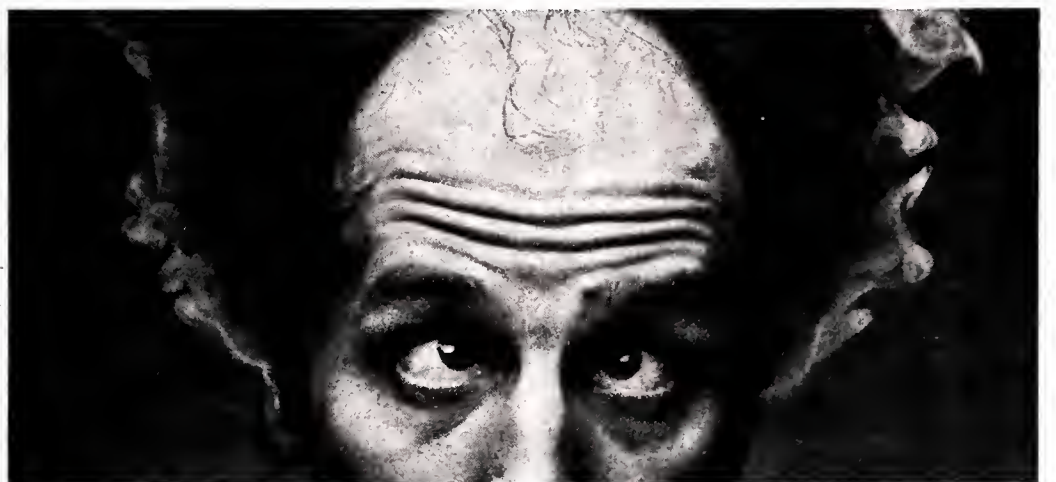
amount of computing in addition to floating-point calculations. The 32032 completed the FFT test in 2.3 seconds. The 32016 required 3 seconds, and the VAX took 4 seconds.

On the Whetstone Benchmark, in which floating-point operations make up a larger portion of the computation, the execution time of the 32032 was 3 seconds as compared with 4.3 seconds for the 32016 and 4 seconds for the VAX. Again, the 32032 outperformed the VAX, and the 32016 came respectively close (see Figure 1).

The relative performance of the two microprocessors and the VAX are shown in Figure 2. The 32032 was 77% faster than the VAX on the FFT benchmark and 33% faster on the Whetstone.

The 32-bit processors are in an advanced development stage and have the potential to operate at frequencies much higher than 10 MHz. Performance is expected to exceed 10 Mips by the end of this decade (see Figure 3).

The price/performance relationship of a multifunctional workstation based on the 32032 is expected to be outstanding. A multifunctional workstation with VAX-11/780 performance could be made available for \$10,000 (see Figure 4 on page 40).



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IN DEPTH/ONE SUPPLIER'S ANSWER

user must be presented with the illusion that all of the addressable memory is available for use at any given time. In a virtual memory system, every address used by the CPU is called a virtual address. Each virtual

The microprocessor was designed to support high-level language compilers; it enables even relatively unsophisticated compilers to produce efficient code.

address is subject to dynamic memory mapping. In memory mapping, a virtual address in virtual memory is translated into a physical address in main memory. All virtual addresses are translated into physical addresses by a common formula and given access protection.

What the virtues of virtual memory, high-level language support and a full 32-bit architecture do for performance is dramatic (see sidebar on page 39). Performance of one million instructions per second (Mips) is now attainable, and higher perfor-

mance is near.

The multifunctional workstation will have full 32-bit performance and be capable of executing 1 Mips or more. Floating-point operation, virtual memory, Unix and high-level languages will be supported. The hardware, software and development tools needed to design such a multifunctional workstation are clearly available. The workstation will be personalized by software for applications such as word processing, robotics, very large-scale integration design and running relational data base management programs.

One question that is bound to arise: Is the workstation too powerful for many applications? Of course, the answer is yes. A stand-alone office system running today's word processing software would be grossly undertasked. However, the cost of developing this performance will be shared by the thousands of workstations based on a single generic design.

The situation sounds familiar. All of the gates of an integrated circuit are rarely used; neither are all of the instructions in the instruction set of a microprocessor entirely used. Yet both technologies are universally ac-

cepted because they deliver remarkable performance for the price.

The multifunctional workstation will be highly effective in data processing settings. Capable of running the same systems and applications software as the MIS computer, it will not only relieve the larger system by running applications locally, it can be used as a software development station. It also is capable of running much more responsive and friendlier applications software than today's personal computers.

The workstation concept also provides unparalleled versatility. The workstation can be easily changed to meet a company's changing requirements, and a company's hardware and software investment will be protected.

About the author

Col Rada is marketing director, multichip microprocessors, for National Semiconductor's Microcomputer Systems Division in Santa Clara, Calif.

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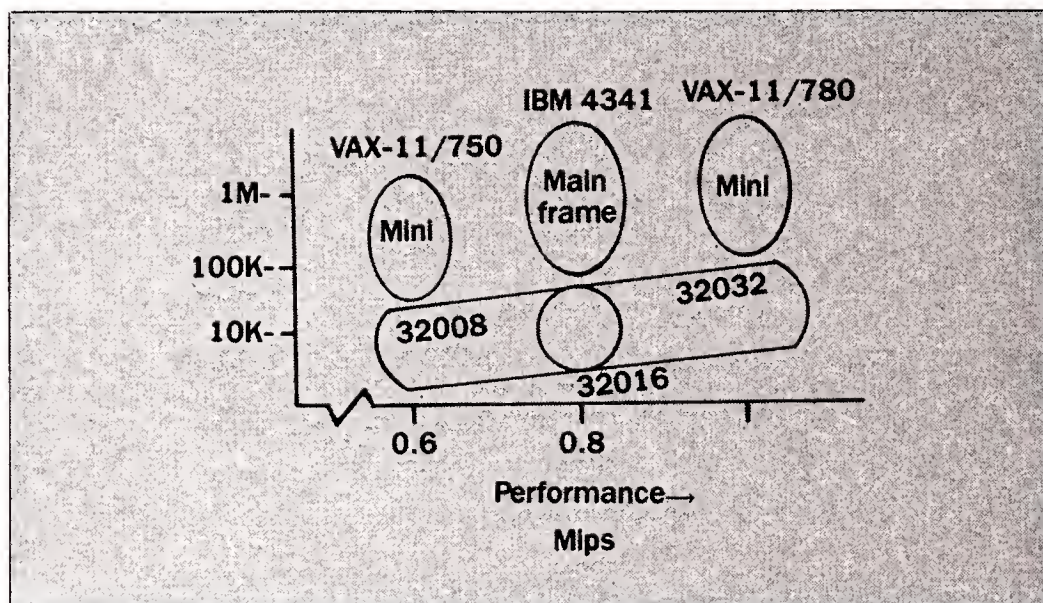
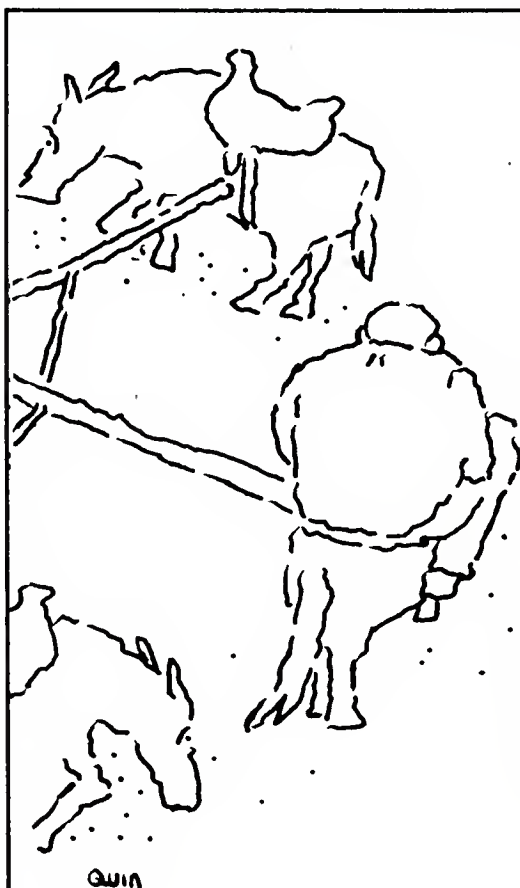


Figure 4



ANOTHER IBM 3274/76 USER AT THE REINS.

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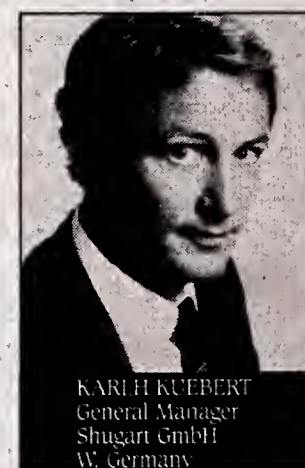


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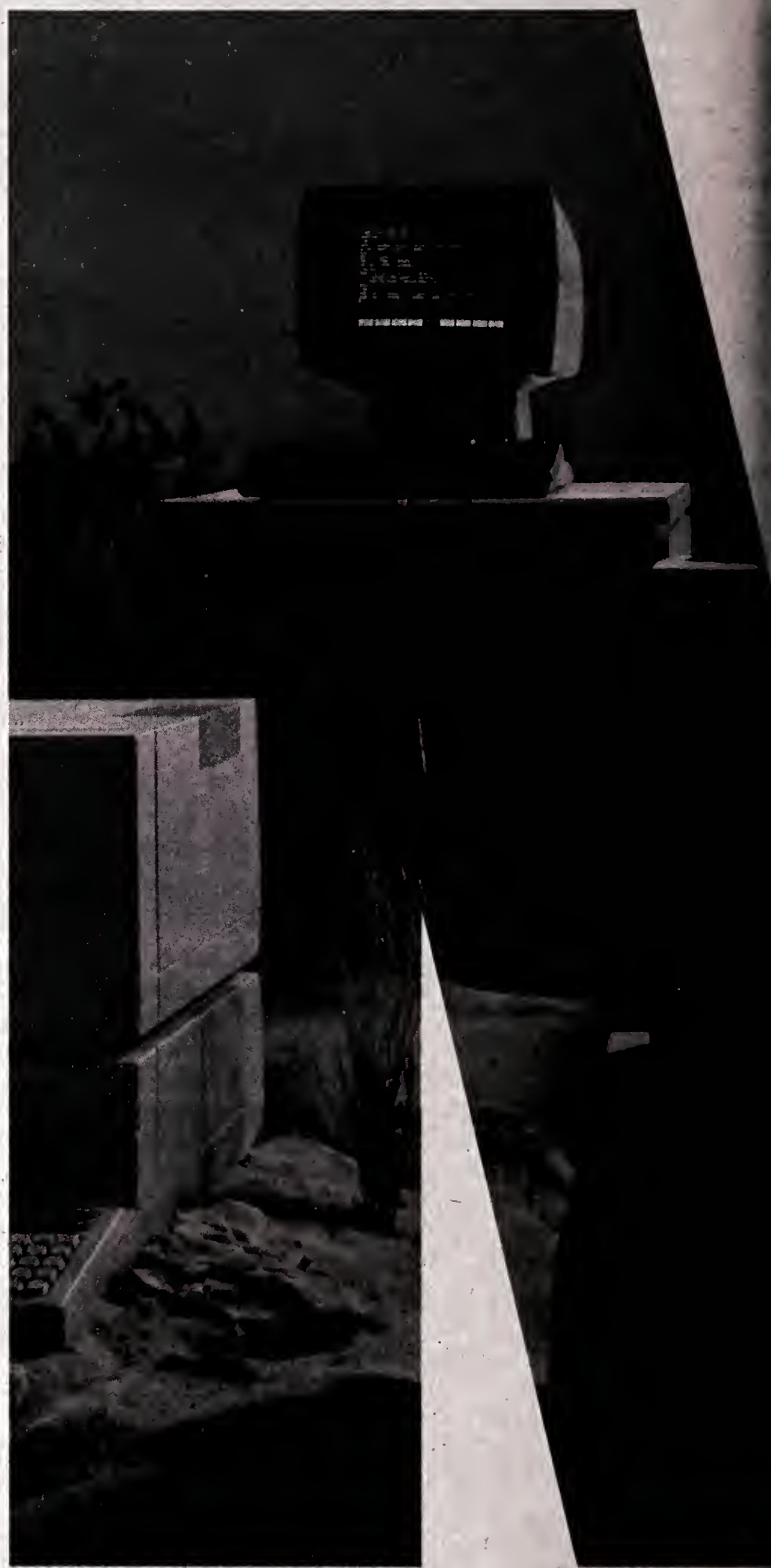
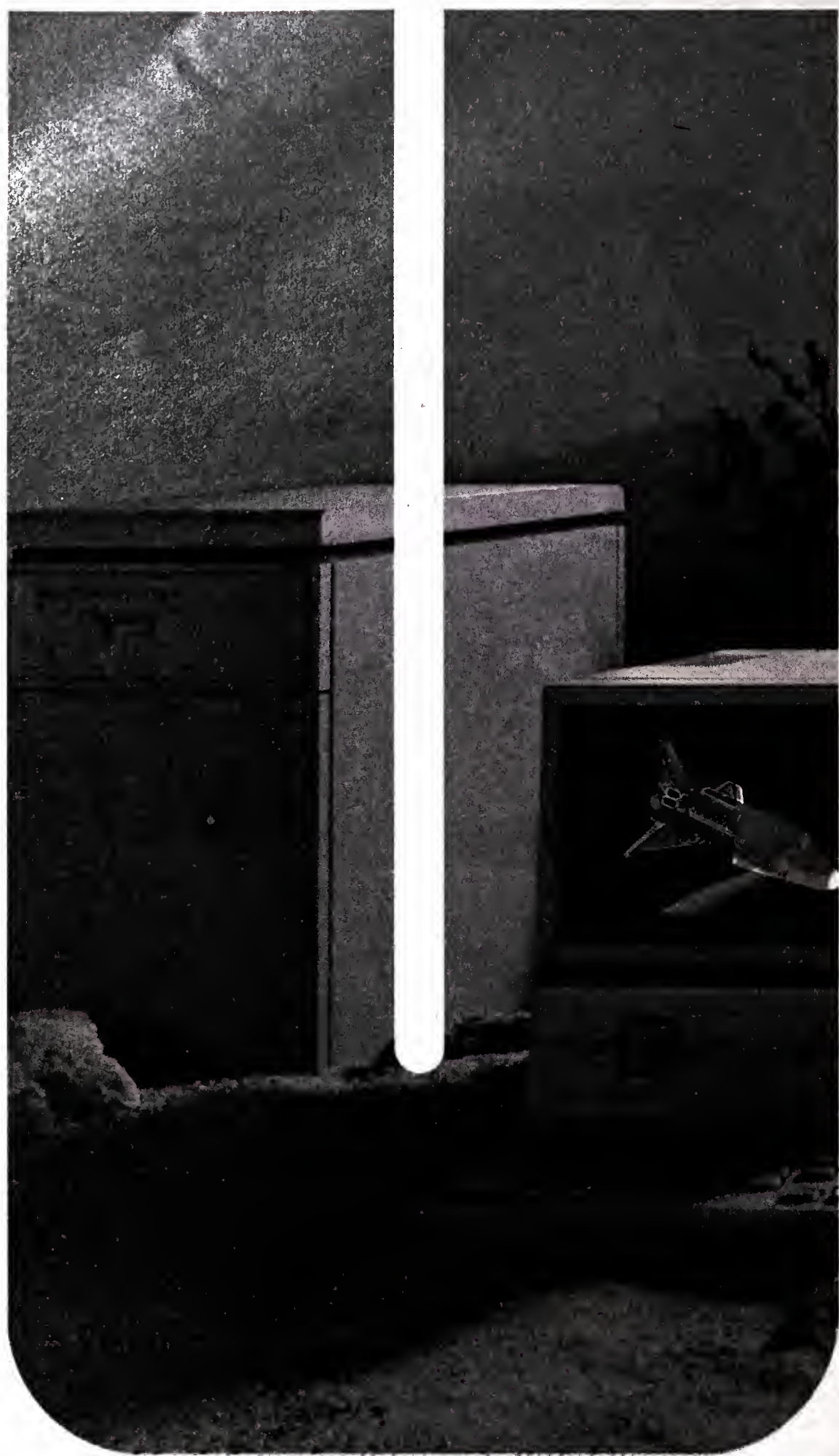
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EDITORIAL

Conference disorganizing

TO: All conference organizers
FROM: Conference attendees
RE: How not to organize a conference

Several ideas on how not to run a conference came to our attention recently while attending an event sponsored by a particular company in a major East Coast city. Maybe you have all experienced the inconvenience and rudeness that is the result of poor planning. If you include all these elements in your conference, you will have no problem keeping people away.

■ **Run late.** One way to do this is have speakers ramble well past their allotted time. For instance, invite to speak at lunch a dignitary whom no one would dare cut short, then let him roll. This usually succeeds in forcing a 2 p.m. session to start at 2:30 or 2:45 p.m. and the rest of the afternoon's events to be either compressed or late or both.

■ **Make sure the microphones don't work.** Usually conference rooms are just small enough to tease the speaker into believing he can be heard. For dramatic effect, have a maintenance worker interrupt the speaker in an attempt to fix the microphone. Make sure he acts like the speaker doesn't exist.

■ **Invite speakers with a poor grasp of the English language.** Especially enticing are those speakers who have trouble distinguishing between "billions" and "millions." This is always good for a few misprints.

■ **Ask speakers not to prepare their remarks.** Prepared remarks only add to efficiency, help audience members follow what's being said and help the press get the story right.

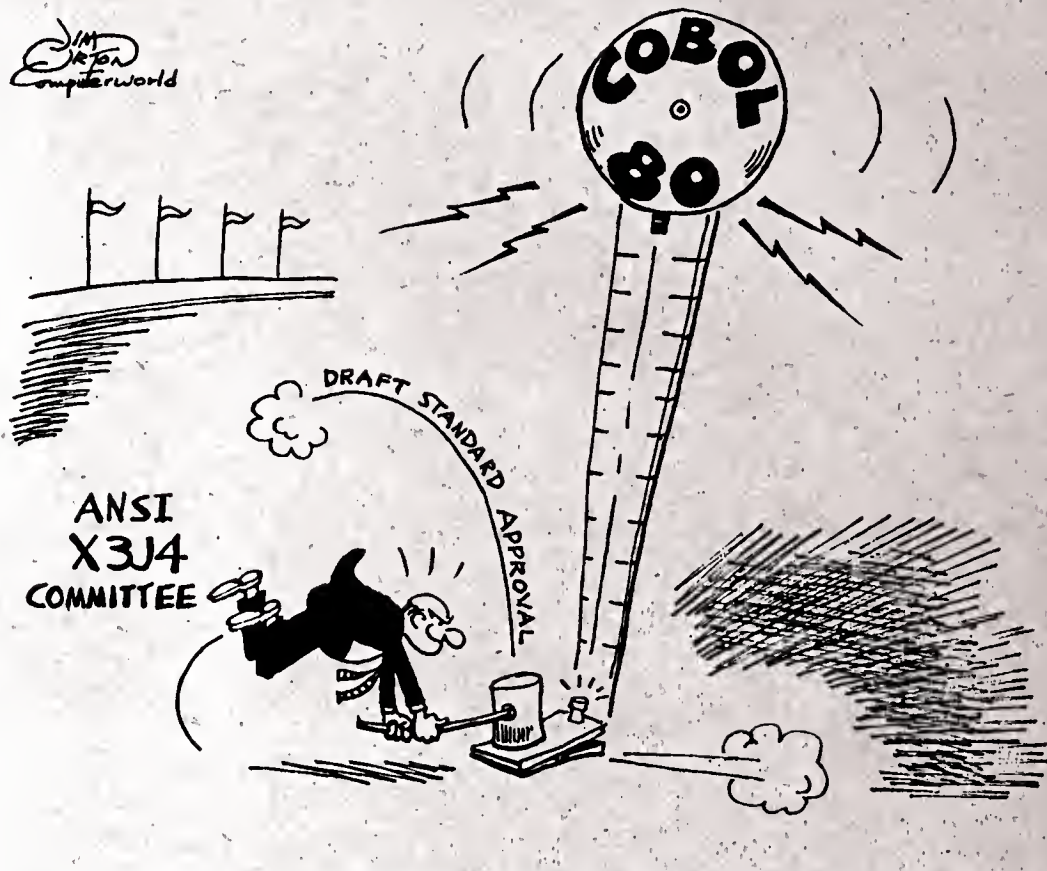
■ **Make bad puns.** Continue the tradition that there is no such thing as a funny joke at a high-technology conference. Don't hesitate to tell wife jokes, sexist comments, the whole bit.

■ **Open the windows to let in outside noises.** It's always best to hold your conference on a day when some celebration is going on outside, preferably one that involves a marching band.

■ **Encourage do-it-yourself multimedia presentations.** When speakers traipse back and forth between the podium and the overhead projector, all the while holding a microphone and slide projector control in their hands, it's guaranteed to madden your audience.

■ **Invite vendors to plug their products.** Why else do conference attendees pay hundreds of dollars to register? Think of it as a high-tech "personal ad."

In conclusion, the only other way not to run a conference is to encourage those attending to engage in rude behavior, such as fighting each other for water pitchers. If you do all these things, you should have no problem getting no one to show up at your next conference.



Going . . . going . . . GONG!

LETTER

Protection clause misleading

The very fine article, "Client data vulnerable in law firms' move on-line" [CW, May 21], was marred by a misleading statement at the end.

The article suggested three levels of protection: line encryption, file encryption and authentication. Such an authentication system "would cost about \$1,000 per terminal."

The last clause is misleading for two reasons:

■ Authentication (password verification) is but one part of access control software. It is inadequate to refer to authentication above without mentioning resource authorization and monitoring.

■ The cost of access control software has nothing to do with the number of terminals in use, except in a very incidental way. It is, in general, a function of the software system cost, installation cost and maintenance cost (based on the number of users and security options used — not on the num-

ber of terminals).

Interested readers may want to read *Information Systems Security* by Royal P. Fisher (Prentice-Hall, 1984).

Michael H. Agranoff
Hartford, Conn.

Computerworld welcomes letters from its readers. Preference will be given to typed, double-spaced letters of 150 words or less; they may be edited for the purposes of clarity and brevity.

Letters should be addressed to Editor, Computerworld, Box 880, 375 Cochituate Road, Framingham, Mass. 01701.

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VIEWPOINT

Talk about natural language



**LECHT
ON SCIENCE**
Charles P. Lecht

This the second in a two-part series.

In the first part of this article on the future of natural language, I concluded that we'd never be free of synthetic languages like Cobol, Fortran, Ada and RPG. This is because our impulse to speak synthetic languages has nothing whatsoever to do with machines. In fact, I concluded that when it comes to really important moments, we abandon the language nature gave us and seek to communicate in the symbols and rules of a man-made tongue. It would then follow that even if we could remove the barriers which prevent us from creating a full implementation of, say, natural English, we'd still find the need to develop languages of our own making. And it is precisely those areas in which artificial languages are employed when we speak to each other that will continue their employment when we "speak" to a machine.

If you accept my conjecture that in all cases of emergency and/or when the utmost rigor is needed in the expression of our wishes, we reach for synthetic languages as a carpenter would, say, reach for his tools, then we can better understand why the development of natural languages on computer systems has taken a back seat to those of artificial origin. But we do want and need to be able to communicate our wishes to a machine in natural language at least as often as when we could have done so in communicating with a person to achieve a specific result. That's really the crux of the issue; for our synthetic languages — muscular as these may be to handle the heavy stuff — are weak, unable efficiently to address problems of far less consequence.

Lecht is chairman of Lecht Sciences, Inc., a New York-based think tank specializing in computer and communications technologies.

To underscore exactly what I mean, think of using a cannon to shoot a fly. From this alone, we can conclude that we need natural language processors, but the evidence is much stronger. The problems with which we must deal in the conduct of our day-to-day lives are so complex that their solution requires us to use everything that is at our disposal — including, when applicable, that which comes naturally. The very fact that we worked on our most muscular tools first — mathematics and commerce languages — has led many people to be-

But we do want and need to be able to communicate our wishes to a machine in natural language at least as often as when we could have done so in communicating with a person to achieve a specific result.

lieve that natural language processors were, because of their neglect, unimplementable, at least for the time being.

I find this astonishing, for it further led them to conclude that this sprang from the hocus-pocus mystery of natural language and, therefore, left its consideration as a practical way to speak to machines to the opus dei of our language establishment... who were all too prone to confirm that it was theoretically impossible. In my view, we've had the capability to do so at any time, depending, of course, on whose natural language we wanted to process.

For example, it has been possible to process the natural language of an infant or a dim-witted teenager for years. That this hasn't occurred gives testimony, more than anything else, to our lack of motivation to do so.

Nowadays, people are creating "natural language front-end" processors of otherwise artificial language systems to aid in communicating their

wishes to a computer. Some of these are beginning to be so effective that they all but eliminate our need to deal with artificial language tools to express our routine requests, and under the right circumstances, these may even deceive us into believing that we are actually communicating with another person. The emergence of these processors signals that a monumental wall that had previously inhibited truly effective computer systems employment is now being torn down.

So, for example, soon you will be able to "tell" a computer system to have a lawn mower cut your grass. While it was possible to do this before, say, in Fortran, the process was painful enough to motivate us to resolve to do the job by ourselves forever. Or we'll be able to ask a computer in plain old English to record Aunt Suzy's birth date for future reference. Doing so just once in Cobol is enough to motivate a person to buy a fancy calendar, write Aunt Suzy's birth date on it and hang it prominently over the breakfast table.

Since most of our impulses to do something during the day address problems like these, we'd do well to get on with making current computer systems capable of handling them. Recent developments suggest that doing this isn't going to be that hard.

Now I suppose these specific observations are going to be the cause of a letter or two by a fifteen-year-old who has, in fact, so automated his father's lawn mower that it starts working to fill itself with oil and gas on sensing — with the attentiveness of a dog waiting to be walked — the earliest sign of dad's intention to do the job himself. And we know there are lots of calendar programs around. But you know what I mean. With natural language processors available to front-end our synthetic language means of expression, computers will more naturally fit into the scheme of things.

And what may we expect from our natural language processor facilities? The ability to understand rhyming couplets or to understand the meaning of and return an adequate response to "I
See **NATURAL** page 46

Exposing a portable computer killjoy



**HUMAN
CONNECTION**
Jack Stone

If you have followed this column during years past, you are among those many masochists who have shared my continuing, agonizing — if not desperate — search for a decent portable machine, one I could haul with me on writing trips overseas and which would:

- Not fracture my spinal column as I carry it aboard an airplane.
- Provide full-function word processing.
- Not require that I tote a second machine for reliability's sake.
- Operate from batteries.
- Upload files onto my ever-ready Processor Technology Corp. Sol 20.
- Not cost an arm plus a leg.

Well, the recent announcements of full-function "laps" (or notebook-size portables) tell me that the portable system show is moving down the runway, about ready to take off, and I'm getting all excited about it. Okay, I can't help it if I'm a portable computer freak, waiting for that momentous day when I, too, will show off my 512K-byte machine in an attache case at Saturday's night's cocktail party.

Stone is an independent management consultant, educator and writer, specializing in DP human communications and personnel development, based in Washington, D.C.

But, whether or not you are a portable computer aficionado, you surely are one to appreciate superb computer engineering, and with what's been developing along the lap vein, you've got to be impressed. Obviously, a huge number have been sold to date, and as machine performance improves and prices are cut, the market, particularly for the lightweights, will positively explode. And everybody in the field knows this.

Everybody, that is, except John Gantz.

In his recent article "Portables: Teleram's Turmoil" [*Infoworld*, May 21], Gantz opens with the obvious statement, "Today's portable computers are highly touted for on-the-road convenience; tomorrow's... should offer Incredible Hulk-like jumps in price performance." But two sentences later, he writes, "One wonders — IBM, are you listening? — if there really is any money to be made in portables."

Wide-open market for low-cost portable

Hey, man, what are you saying? There is a wide-open market for a low-cost decent machine, the lighter the better, for millions of people who travel for a living. That includes insurance agents, field auditors, project managers, data collectors, service personnel, reporters and so on. Plus a million more college students who will haul the systems around in their knapsacks.

And, John, when you write, "But the retail market for portables has been crummy," I have no doubt of it, because the market is obviously a commercial one; with decent products, purchases will be made in bulk by large firms, government agencies and educational institutions — no great sur-

prise because these organizations constitute the largest segment of the current desktop market.

Gantz further told a tale of financial woe regarding White Plains, N.Y.-based Teleram Communications Corp., a long-time purveyor of portables. Gantz wound up suggesting, however, that Teleram stock might be a good investment at this time. The story was rather bothersome to me because Teleram's product line is such a natural that I thought the company would be swimming in greenbacks [CW, May 28].

I contacted Charles J. Satuloff, Teleram's president, who offered these comments about the firm: "We believe we have overcome our problems and are now looking to the future with considerable optimism. We recently concluded a financial agreement with a major lender [that] will provide us with an adequate base of term loans and a line of credit. Furthermore, we have acquired rights to distribute the Dulmont Magnum, which we believe is the most powerful MS-DOS lap computer on the market. In addition to the [Intel Corp.] 80186 CPU chip, the Magnum features 128K bytes of [read-only memory] ROM with built-in programs for word processing, spreadsheets, communications and others. In addition, the machine provides up to 256K bytes of Cmos random-access memory, plus plug-in ROM slots for programs or add-on memory. By our reckoning, the Magnum is three times faster than the IBM Personal Computer and yields four times the computer power in less than 10% of the space.

"With the Magnum, Teleram has the broadest portable product line of any computer company in the world today."

VIEWPOINT

NATURAL from page 45

love you?" Resoundingly, yes, but except as an intellectual exercise, it's hard to imagine why in the world anyone would want to express these to a computer. Anyway, in dealing with such things so that a response is possible, a computer can't be expected to reflect anything more than our own human fogginess in comprehending them in the first place.

We don't have to, nor do we want to, provide automation to all (whatever that means) our natural language for an endless list of reasons. Among the most important of these is the fact that there is a vast gap between what it is possible to say with natural language and what the average person speaks during his lifetime. We need only process what we

speak, which in most cases, is exceedingly little. A good analogy is suggested by the difference between the number of chess moves on a board and the dismally few moves a rank amateur is likely to play.

The second reason on the list is the fact that our relationship with a machine doesn't require that all our natural language be implemented. As a slave whose every wish is our command and to whom we have no moral responsibilities, our language requirements are substantially trimmed; for example, "please" and "thank you" are unneeded.

That all the language ever spoken which contributes in some way to the performance of our jobs involves ridiculously few words gives us the hope that these can be processed by a computer to obtain the results we de-

sire. And that the universe of responses to these in any particular job situation is likewise paltry confirms this.

In my judgment, the task of creating a program that can accept one person's language and conversationally respond to that person in a predictable way is — ignoring the economics involved — a trivial task. The task of creating a natural language processor for a group of people wedded to the same occupational discipline — such as accounting — is harder, no doubt, but not impossible. Such processors are unquestionably worth creating, for the sooner we accept that a person's language at work would best be spoken to a machine, the more time we'll have to improve our communications with human beings.

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CW 6/18



LETTERS

Disastrous terms

In the past, we have considered *Computerworld* an excellent source of current industry information. We were disappointed, however, upon reading "Up from disaster" in the In Depth section [CW, March 26]. The article exhibited a lack of understanding of the terms under which AT&T was required to divest its operating companies.

We were involved in the case described in the article as representatives of Bell Atlantic. As such, we feel compelled to comment on some of the inaccuracies rendered by the author, Eli Hiller. Quoting Mr. Hiller, "Bell Atlantic, strangely enough, proposed a Japanese-made PBX rather than a Dimension or Horizon System."

Hiller, a consultant in our industry, apparently is unaware of some of the major terms of the court-approved AT&T breakup. Bell Atlantic, no longer a part of AT&T, does not carry the Dimension and Horizon product lines.

Hiller also should know that Bell Atlantic can provide PBXs only through a subsidiary — and, in fact, a system was proposed. Hiller again erred in his presentation of the facts. As he was told, the system we proposed is manufactured in Shelton, Conn., USA.

In addition to misrepresenting the facts, Hiller also cast a shadow of doubt about the competence and commitment of Bell Atlantic. Nothing could be further from the truth. In fact, our team received a letter of commendation from an executive of the company as a result of our efforts in this emergency.

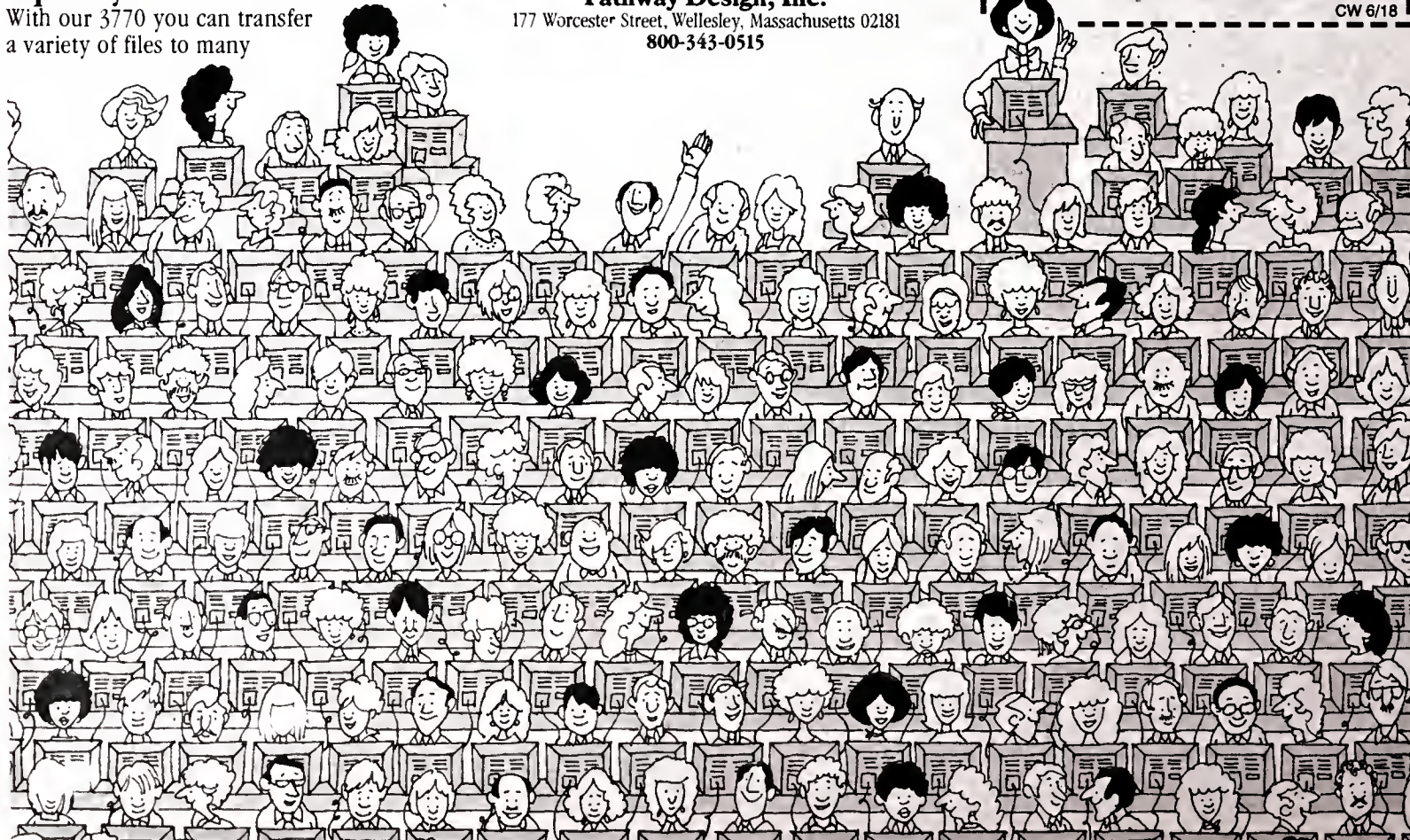
It is unfortunate that this disaster occurred at the same time the largest divestiture in corporate history was taking place. The divestiture did cause complexities that did not exist in previous emergency situations. It is apparent, however, that Hiller expects the best of both worlds — that is, one company responsible for end-to-end service and a situation in which there is competition among many companies.

Nadeen VanTuyle
Robert House

Pennsylvania Bell Telephone Co.
Bala Cynwyd, Pa.



'I understand they're selling the house.'



VIEWPOINT

Technical support: the gray-collar profession



**READER'S
PLATFORM**
Guy Goubéaux

Technical support is an evolutionary job — not blue, not white, but somewhere in between. It had its beginnings not with the invention of the vacuum tube, but hundreds of years before in the trades of Western Europe (probably in the Dark Ages).

It came to be for the same reason as did carpentry, coopering or any of the trades; the environmental situation demands an individual adept at combining a particular knowledge and manual skill to accomplish a desired result. The electronic environment, for example, needs the trained specialist to manipulate it.

With the invention of the computer came the creation of the technical support trade. The support analyst of today is by every analogy the craftsman of the past. Before he is accepted into the apprenticeship program, he must show a natural inclination for the work, a precocious curiosity for the computer and a willingness to learn.

Training takes time

One does not go from apprentice to journeyman overnight; three to four years for tech support training is not uncommon. There are many things to learn: assembler languages, dump analysis, product installation and system maintenance, to name a few.

Many of the early tasks are routine and mundane, but the degree to which they are mastered is the degree by which the future craftsman can be measured, for these are the tools and tricks of the trade.

Master these tasks and become a journeyman, a recognized professional. Journeymen should be competent enough to lay out the job, estimate its cost and bring it in on time. Very often no easy

Goubéaux is a lead systems programmer in the technical support division of the Salt River Project on water power in Phoenix.

Computerworld welcomes opinion pieces from its readers. Submissions to the "Reader's Platform" column should be typed, double-spaced and no longer than six pages. Computerworld reserves the right to edit them for the purposes of clarity and brevity. Send them to Editor, Computerworld, Box 880, 375 Cochituate Road, Framingham, Mass. 01701.

trick, but the rewards are many. Pride in a job well done is tops on the list; good pay is second.

America vs. Europe

In American trades, apprentice and journeyman are the only two classifications recognized. Tech support, however, seems to follow

closer to the European scales, which recognize one additional level — that of master craftsman.

Unfortunately, many good journeymen leave the trade. They become realtors, insurance salesman or administrators. Some choose to progress to the next level of expertise, to ply their trade into the art

form it really is. These are technical consultants.

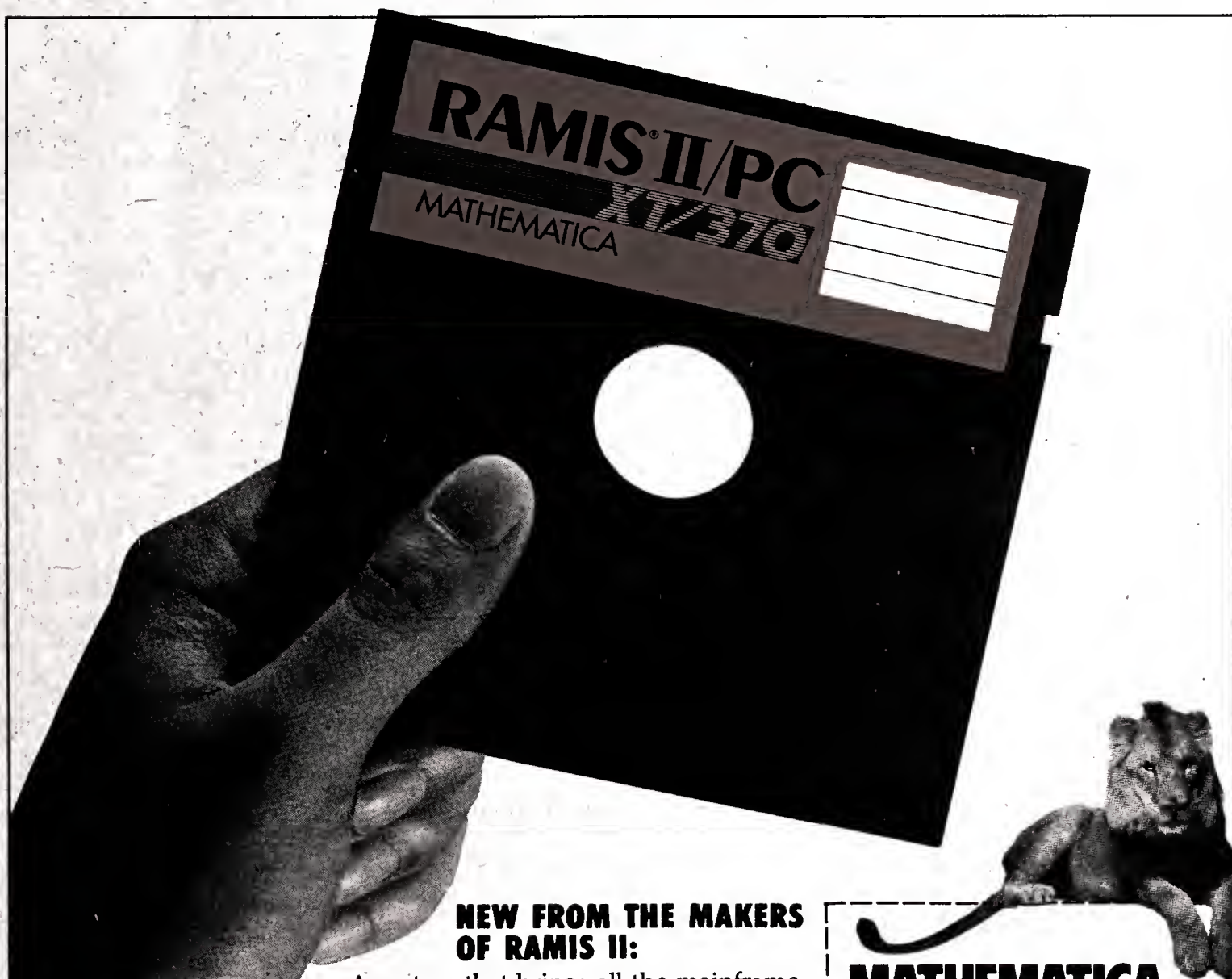
Technical support as a trade has one basic difference from its blue-collar ancestry. The blue-collar worker always has something to show for his toil. He is a producer in the material sense of the word, unlike his white-collar counterpart who never

produces anything in the material sense and is not expected to.

The gray-collar worker produces in the material sense — but nobody can see it, let alone measure it. And so the tech support dilemma — a profession that cannot be described either as blue collar or white collar. ‡

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SOFTALK
Paul Gillin
CW Senior Editor

AT&T plans to add scope to 3B20 line

AT&T is reportedly preparing to broaden its limited selection of software for the company's recently announced 3B20 computer line.

Word that AT&T will announce additional programs for the 3B20 processors in late June or early July surfaced unexpectedly during a May 31 address here where representatives of two AT&T subsidiaries were the featured speakers. The address took place during a luncheon meeting that coincided with the fourth annual conference of the Association for Computer Operations Managers (Acom).

During the question-and-answer period immediately following the speakers' formal remarks, an Acom conference attendee noted the current dearth of 3B20-compatible software and asked when the shortage is likely to be alleviated.

In response, AT&T Information Systems, Inc. Staff Manager Hank Nichols rose from his chair in the audience and advised the questioner to "go back to your office and wait" for AT&T to announce its next batch of software within 30 days. Nichols, who works in the company's Enhanced Network Services organization, declined to divulge any details about the upcoming announcement.

The anticipated programs will form part of an AT&T software product line that already includes a Cobol syntax checker running under the Unix System V operating system. Designed to speed application development in mainframe environments, the productivity enhancement tool arrived on the scene in early

See AT&T page 53

Litton affirms commitment to AI but advises prudence

By John Desmond
CW Staff

BOSTON — A team of Litton Industries, Inc. executives has concluded that artificial intelligence is "ready for applications to serious problems," previously considered not economical to solve with computer technology. As a result, the company is developing a number of AI applications, according to Sy. Schoen, the Litton staff scientist who led the team.

The \$4.7 billion company, which is active in the defense, advanced electronics, industrial automation and geophysical exploration markets, began looking at AI in October. Speaking at the Fifth Biennial Executive Forum sponsored by Arthur D. Little, Inc. (ADL) here recently, Schoen said an AI team of 10 was assembled, consisting of members with 15 to 20 years of business experience each. The company avoided the "morass" associated with trying to define AI, Schoen said, and simply tried to find out how to make it work.

Of a total of 14 AI projects being evaluated or initiated, Schoen told *Computerworld* that three now have quick prototypes, and two more will be in the prototype stage within several weeks. To

build its AI systems, Litton is both buying and developing software, Schoen said. With the advice of ADL executives, Schoen said, the firm located three or four firms skilled enough in AI to help. Otherwise, he said, programmers within 10 divisions of Litton involved in AI projects are designing their own AI systems. "As we get smarter and smarter, we plan to do all of it," he said.

Though Litton's AI approach has been cautious, Schoen said corporate headquarters has invested \$750,000 in the AI research effort since October. In the beginning, a number of questions were posed such as: what is real in AI, what applications should be pursued, what do the customers want, what are other companies doing, and what resources are needed, Schoen said.

Finally, the AI team had to get responses from top management. "That turns out to be a tough thing," Schoen said. He recommended that AI development projects have "internal champions" within organizations.

While Schoen said it would be difficult to determine the total cost of the projects

See AI page 60

Financial reporting package updated

ANDOVER, Mass. — Software International Corp. has announced Version 6 of its general ledger and financial reporting package for IBM mainframes under IBM's OS and DOS operating systems.

According to a spokesman, Version 6 of the data-base-oriented general ledger and financial reporting package includes an option that enables users to switch from a production mode to real time in order to perform immediate updating of accounts, to enter and post journal entries and to perform maintenance procedures.

The spokesman said users can operate

in production mode through their accounting period and use the real-time option to make last-minute changes to account balances or adjust journal entries. The system is available in both an on-line and a non-on-line version.

The on-line version of the package for the DOS environment is priced at \$82,000 and the non-on-line version at \$59,000. The on-line version for the OS environment is priced at \$90,000 and the non-on-line version at \$71,000.

Software International is located at 1 Tech Drive, Andover, Mass. 01810.

INSIDE

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Application

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DBMS/60

SOFTLINE/LES GILLIAM

Why are some shops more successful than others? Read on . . .

How do they do it . . . those software organizations that seem to stand head and shoulders above all the others . . . those groups with high morale and low turnover, outstanding productivity and enviable efficiency, a good image in the eyes of management and, most incredibly, the respect and appreciation of users?

There seem to be several attributes of first-class software development and support groups. Here are seven factors which, if properly managed, will contribute to the development of a superior software staff, minimizing turnover and maximizing productivity.

■ **Environment.** Those people who perform as professionals will normally think of themselves as professionals. The office environment makes a statement about the quality of work that is expected. It does not cost much to offer a work area that is clean and bright and offers some privacy.

Do the analysts and programmers consider themselves to be business people who influence and contribute directly to the success of the company? Are they treated as part of management as opposed to labor? You may not agree, but even the adherence to the accepted standard of dress code for business professionals in our country today will influence their self-image, as well as the opinion of others, particularly users.

In addition, the opportunity for employees to grow, enhance their

skills and broaden their knowledge will confirm that they are considered professionals. The availability of training in effective writing and public speaking, as well as technical and management subjects, is especially valuable in developing the potential of the staff.

■ **Project Management.** The relationship between the data processor and user has always been difficult. The user expects magic, speed and low cost. The data processor offers mystery, change and jargon.

The top-notch DP shops have formal project management procedures that are clearly understood by the users. These procedures break down the system development process into identifiable steps, with milestones, and are the basis for accurate cost estimates and project schedules.

■ **Organization.** The software developer needs to know where he fits in the organization, to whom he is accountable, and the specific opportunities for advancement. Every person needs a title. That may sound trite, but some organizations do not have well-defined positions in their DP group. I also believe every person needs recognition and appreciation for accomplishments and contributions. One tangible recognition is a promotion, with a new title, that clearly reflects a step upward in the employee's career.

A common complaint among DP professionals is the lack of a clearly defined accountability structure. Does the employee receive direction and evaluation from only one superior, as it should be, or is he caught in the cross fire, taking orders from

See FACTORS page 53

Gilliam is an independent consultant, based in Ponca City, Okla., and a regular contributor to Softline.

SOFTWARE & SERVICES

SYSTEMS SOFTWARE

TELECOMMUNICATIONS
TECHNOLOGY CORP.Automatic Dynamic Application
Management

Telecommunications Technology Corp. has introduced Automatic Dynamic Application Management (Adam), which allows users to allocate or deallocate applications dynamically without shutting down an on-line system.

Adam reportedly helps organize files and applications and substantially removes the need for Job Control Language. The software automatically deallocates related files on scheduled batch processing cycles, the company said.

The product can move an application dynamically from one IBM CICS system to another CICS system, one CPU to another and from CICS to a batch system.

Adam costs \$15,000.

Telecommunications Technology,
39 Broadway, New York, N.Y. 10006.

SDI, INC.
VM Magic

SDI, Inc. has announced VM Magic, which is described as an extension to IBM's VM operating system which gives the VM user the capability to simulate virtually any disk device.

According to a spokesman, the systems software package is said to allow any guest operating system and its applications software to utilize any type of direct-access storage device (Dasd) without change to programs or Job Control Language. The system operates by simulating the disk device types required by the user's software, using whatever disk devices are available on the host CPU.

As a result, VM can be used to simulate any desired Dasd configuration, limited only by the total amount of real disk space available on the host processor. The product is said to allow any disk access method, such as IBM's Isam or Bdam, to operate using fixed-block architecture devices. It operates with IBM's VM/370 or VM/SP and supports any operating system, the spokesman said.

VM Magic is priced at \$22,500.

SDI, P.O. Box 5801, 1700 S. El Camino Real, San Mateo, Calif. 94402.

B I MOYLE ASSOCIATES, INC.
Bimecho

B I Moyle Associates, Inc. has announced the Bimecho package for IBM mainframe users.

Bimecho reportedly provides a facility for duplicating IBM 3270 terminal screens as they occur at one CRT, under IBM's DOS/VSE and CICS/VS, simultaneously on other CRTs, 3270 terminal printers or on a DOS/VSE system printer. Programmers can use Bimecho to observe a problem occurring on a user's terminal at a remote location.

The spokesman said Bimecho can also be used for applications demonstrations where multiple terminals are available and to create a hard copy of terminal activity for analysis of testing sessions. Bimecho is priced at \$1,600 for a permanent license, or it may be leased for \$800 per year or \$80 per month.

B I Moyle Associates, 5788 Lincoln Drive, Minneapolis, Minn. 55436.

B I MOYLE ASSOCIATES, INC.
Bim-Odis/OS

B I Moyle Associates, Inc. has released a version of its Bim-Odis package with support for IBM's MVS and OS/VS1 CICS systems.

Bim-Odis/OS reportedly is designed to display the operational status of CICS systems, to detect problems in those systems and to assist in the analysis of CICS operational or performance problems. Its "watch-dog" mode of operation may also be used to run the product unattended to detect problems.

Bim-Odis/OS is priced at \$5,000 for permanent license or can be leased for \$2,500/year or \$250/mo.

B I Moyle Associates, 5788 Lincoln Drive, Minneapolis, Minn. 55436.

See **SOFT** page 51

ADR offers on-line additions

PRINCETON, N.J. — Applied Data Research, Inc. (ADR) has announced a new release of its on-line development program said to feature enhancements for IBM DOS, VS and VSE operating systems.

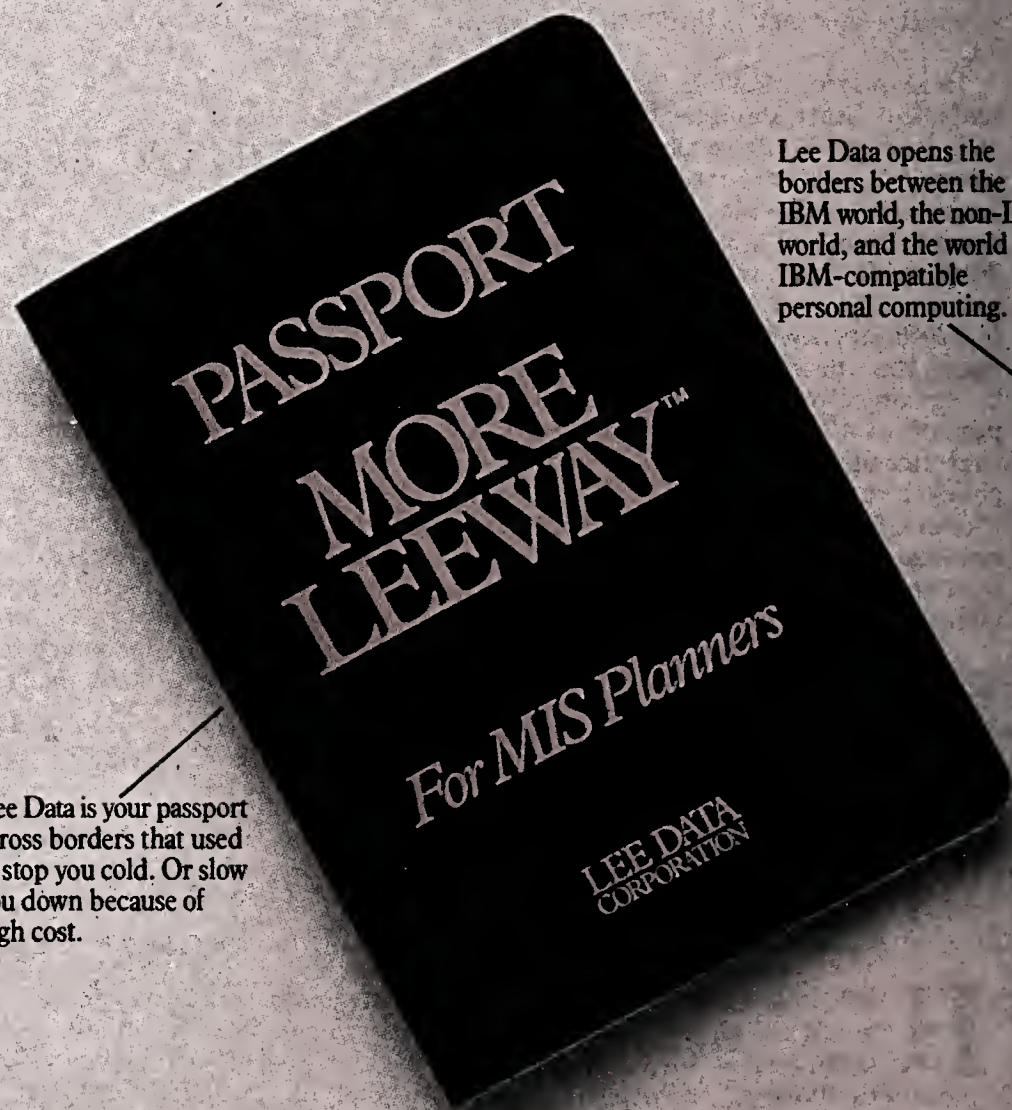
Release 3.3 of ADR/Vollie reportedly allows users to allocate additional on-line libraries, which permits access to previously inaccessible data without reinitializing the system. This access to the on-line library is controlled completely within Vollie routines, a spokesman said.

Another enhancement reportedly provides one user with the ability to list a member exclusively and prevent access by other users, thus en-

suring complete user data control, the spokesman said. The Vollie editor has been expanded to identify modified lines more readily and provide additional line editing functions.

Another feature of Release 3.3 is said to be the ability of an authorized user to scroll through the hard-copy console file created by IBM's DOS/VSE Release 3 and above. The new release also supports VSE Release 3.5. It is available for IBM 370, 30 series and 4300 series systems and plug-compatible environments.

Permanent license prices start at \$14,700. ADR is located at Rt. 206 and Orchard Road, Princeton, N.J. 08540.

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SOFTWARE & SERVICES

SOFT from page 50**DESSAU REALTY SERVICES**
Bookprnt

Dessau Realty Services, a division of Dessau Realty & Insurance Co., has announced Bookprnt, a formatting utility package for the IBM System/34 and System/36.

Bookprnt is designed to print manuals, documentation and reports in book format. It will print any spool file on both the front and back of continuous paper with margins aligned for binding, and edge-bound books can be printed in one- or two-column formats at 10 or 15 char./in.

Bookprnt is said to be compatible with any System/34 or System/36 text editor. It is priced at \$150.

Dessau Realty Services, P.O. Box 5026, 555 First Street, Macon, Ga. 31208.

SOFTWARE ASSISTANCE, INC.
Procdoc

Software Assistance, Inc. has announced that its Procdoc report utility for job control language (JCL) and cataloged procedures now includes support for input from Pansophic Systems, Inc.'s Panvalet program management and security system.

According to a spokesman, the Procdoc system allows job control statements for IBM DOS and DOS/VSE and Software Pursuits, Inc. DOS/MVT installations to be listed, summarized and cross-referenced directly from the system, private source statement libraries or from

the DOS/VSE procedure library. Input from other sources, including Panvalet data sets, can be processed with the system's user exit facility.

The reports contain information necessary for analysis and control of procedures and job streams.

Procdoc is available on magnetic tape and is priced at \$1,200.

Software Assistance, P.O. Box 2101, Santa Clara, Calif. 95055.

SYMBOLICS, INC.
Release 5.0 of 3600 line

Symbolics, Inc. has announced Release 5.0 software and documentation for its Symbolics 3600 line of symbolic processing computers.

New features of Release 5.0 reportedly include a network system designed for easier network expansion

and maintenance, input editor, front-end processor improvements, easier software installation procedures and the introduction of Macsyma, a mathematics software package.

Release 5.0 also includes new documentation.

The 3600 system carries a base price of \$84,500, including a 2M-byte memory, 169M-byte hard disk, black-and-white bit map graphics display and networking software, a vendor spokesman said.

Symbolics, Four Cambridge Center, Cambridge, Mass. 02142.

SST COMPUTER SERVICES
Retrieve-Display Member Description

SST Computer Services has introduced a file utility package for the IBM System/38 called the Retrieve-Display Member Description (RTVMD, DSPMD).

The RTVMD command reportedly retrieves information about a member in a file. DSPMD command displays, lists or sends to an output file information about one or more members in a file, a company spokesman said.

DSPMD is said to enable the programmer to display multiple members using the System/38 generic object search, according to the vendor spokesman.

Among the information displayed or retrieved is the current number of records in member, deleted number of records in member, total size of member in bytes, source type if file is a source, data member created, data and time of last change to member and member text, the spokesman said.

The cost of the program is priced at \$150 from the vendor.

SST Computer Services, P.O. Box 292591, Columbus, Ohio 43229.

CXI, Inc.
Connews' enhancements

CXI, Inc. has announced enhancements to its Connews software to include synonym and direct bulletin access functions.

Connews reportedly allows users of IBM 3270 terminals or compatibles operating in an IBM MVS or VS1 operating environment to select and display the status of available ACF/Vtvm network application programs from a menu.

The synonym function allows the substitution of generic names for application identifiers, a spokesman for the company said.

This feature also is said to route automatically and transparently the user from an unavailable application on a specific host to similar (default) applications on another host in the ACF/Vtvm network, the spokesman added.

A permanent license fee starts at \$7,500 per CPU from the vendor.

CXI, 3606 W. Bayshore Road, Palo Alto, Calif. 94303.

PRODUCTIVITY AIDS**REM ASSOCIATES**
Remdoc

REM Associates has introduced Remdoc, an automated documentation system for the IBM System/34 and System/36. Remdoc is said to be

Continued on page 54

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SOFTWARE & SERVICES

FACTORS from page 49

several bosses?

■ **Compensation.** Money is not a major motivator, but it is certainly a motivator. If your software people are not receiving a fair and competitive salary and benefits package, troubled times are ahead. A good manager will stand up for his people in requesting budget approval for competitive wages. Having facts about competitive salaries in your area and your industry is a necessity. Be sure your people know that you conduct a formal study and survey each year to support the salary structure of your organization with facts.

■ **Appraisal and Counseling.** The principal concept behind counseling is to build up, not tear down. To conduct an appraisal and counseling program properly, you must have a procedure for measuring performance, the supervisory alignments for observing performance and standards against which performance is compared.

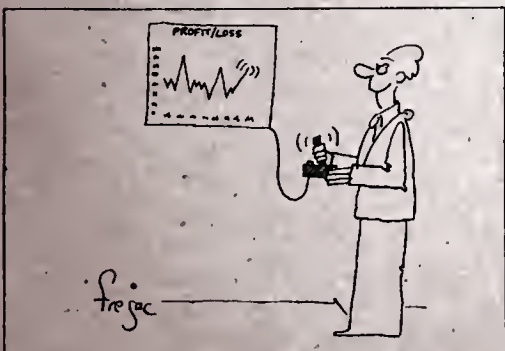
The employee must know that the appraisal has a direct bearing on compensation and advancement. The counseling then gives opportunity for commendation, for motivation, for performance evaluation and for developing a plan of action for addressing areas of potential improvement.

■ **Hiring.** Before extending an offer, you should be certain the candidate will raise the overall level of the software group's performance. Define specifically what you need along with the minimal education and experience qualifications acceptable. Take your time in searching and evaluating, confirming the background and references. Does the candidate possess the attitude, skills and knowledge to fill the requirements of the position and to bring a positive and compatible personality into the group?

■ **Communications.** The boss should never reveal to the troops that he is human and fallible. Bosh! This ivory tower attitude will only discourage communications and widen the gap of understanding, support and loyalty. Conversely, the informal, everybody's buddy approach can be even more damaging when lack of leadership, respect and confidence is the result.

An appropriate relationship between subordinate and superior will clearly establish authority and responsibility, yet leave room for the "open-door policy" and two-way, unimpaired communication.

Even though all seven areas appear to be in good shape, you may still have some turnover. You may even find it necessary to terminate an employee. But both can have positive effects. Don't expect perfection from your employees, your boss or yourself. But through effective, persistent application of these guidelines, you can build and maintain a competent, and even outstanding, software staff.

**AT&T** from page 49

May, only about five weeks after the introduction of the 3B20 series, the vendor's first computer line.

Despite the existence of the syntax checker, however, AT&T has yet to establish itself as a major supplier of software for its 3B20 machines. The result is that the company's customers have either had to write most of their programs themselves or acquire the products from independent developers of Unix-based applications, according to Gary Hickox, the district manager in Oakland, Calif.

Hickox was one of two AT&T representatives who spoke during the Afcom luncheon meeting. The other speaker was James Simmons, a systems manager with AT&T Communications.

Speaking on the subject of communications, Simmons described AT&T's recent breakup as both a boon and a drawback for users of large networks. Divestiture has cut customers' transmission costs, but has also confronted users with unprecedented complexity, he maintained.

At least three companies

"In the past, if you wanted to install a link to communicate from one point to another, you dealt with one company and one circuit number," Simmons recalled. "Now, to get the same communications lines, it's necessary to work with at least three companies and three circuit numbers."

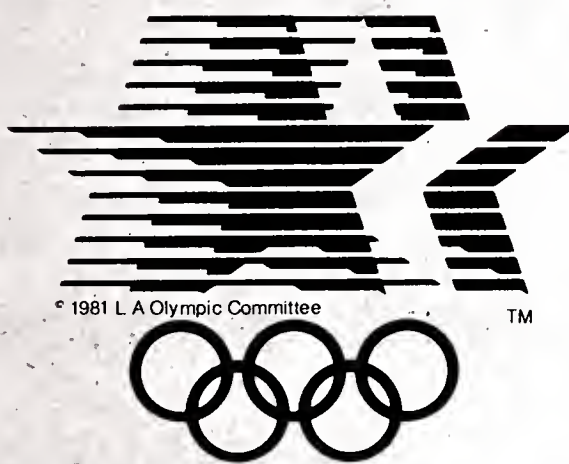
Divestiture has also reportedly compounded the problem of network

planning and installation by greatly extending delivery lead times. "Deliveries of private lines used to take between 18 and 25 working days," Simmons said. "Today, the interval is three to six months, although a few orders, for some mysterious reason, breeze through the process a whole lot faster."

In other comments during the luncheon meeting, Hickox referred briefly to AT&T's continuing efforts to rid itself of the legal restrictions that now forbid AT&T Information Systems and AT&T Communications from cooperating on user accounts.

At the present time, AT&T Information Systems is required by law to remain organizationally and operationally separate from the AT&T parent company and its other subsidiaries.

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San Francisco (415) 495-8811
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London (44) 296-314-73

SOFTWARE & SERVICES

Continued from page 51

fully compatible with RPG II½, BPS Information Services, Inc.'s productivity package.

Remdoc is useful for tracking files, fields and procedures in up to 30 libraries.

Remdoc is priced at \$1,250, and RPG II½ costs \$950.

REM Associates, 207 Virginia Ave., San Francisco, Calif. 94110.

APPLICATION PACKAGES

SOFTWARE INTERNATIONAL CORP. Accounts Payable Financial Software

Software International Corp. has announced that its Accounts Payable Financial Software system is available for users of Data General

Corp.'s Eclipse MV series of processors.

According to a spokesman, the software will operate with DG's AOS/VS operating system and Infos file management design to provide on-line capabilities for collecting and maintaining payables information. The Accounts Payable Financial system provides financial reporting capabilities and includes an international currency and payment system.

In addition, the package includes a real-time vendor file that allows users to perform functions such as interactive updating of vouchers, distribution, disbursement and management reporting. The Accounts Payable Financial Software system is priced at \$22,000.

Software International, 1 Tech Drive, Andover, Mass. 01810.

DYNAX RESOURCES, INC. IBM System/38 packages

Dynax Resources, Inc. has announced three packages for users of the IBM System/38.

According to a spokesman, the General Ledger/38 package includes a report writer that allows the user to customize the format of reports and to include or exclude data for comparisons. The package provides individualized security for each option on a menu.

The Order Fulfillment/38 package allows a company to track goods from time of or-

der until sale.

It includes five modules: billing, order entry, inventory control, purchase order and sales and gross profits analysis. The system utilizes the first-in, first-out method of tracking inventory costs and pricing.

The Dynax/38 package is an integrated system that includes General Ledger/38, Order Fulfillment/38 and Dynax's Accounts Payable/38 and Accounts Receivable/38.

General Ledger/38 costs \$7,500; Order Fulfillment/38 costs \$50,000; and Dynax/38 costs \$67,050.

Dynax Resources, 44 Harbor Park Drive, Port Washington, N.Y. 11050.

DYNAMIC CONCEPTS, INC. Bits Plus

Dynamic Concepts, Inc. has announced it is bundling business applications software at no additional cost with its multiuser, time-sharing operating system for Data General Corp. systems.

Called Bits Plus, the business package includes general ledger, accounts receivable, accounts payable, inventory control, sales analysis, finance charge, purchase order and payroll software. The operating system is designed for the DG Nova and Eclipse S/140 and compatible systems.

Bits Plus costs \$5,000.

Dynamic Concepts, 14712 Franklin Ave., Tustin, Calif. 92680.

CORTEX CORP. Executive Data Display System; Corgraph

Cortex Corp. has introduced two business presentation graphics packages designed to run on Digital Equipment Corp. VAX-11 or Professional 350 systems.

Executive Data Display System (Edds) for the VAX-11 and Corgraph for the Professional 350 are both on-line, interactive, device-independent packages, a spokesman said.

The two packages reportedly convert corporate data into transparencies, hard copy or 35mm slides using a variety of graphics designs and lettering styles. Multi-color line plots, high/low/close plots, scatter diagrams, horizontal and vertical bar charts, pie charts and text charts can be created interactively from a terminal or can access existing Ascii or Software Arts, Inc. Data Interchange Format files.

Edds sells for \$7,500. Corgraph costs \$600.

Cortex, 55 William St., Wellesley, Mass. 02181.

DATA PROCESSING SERVICES, INC. FIN/38 Financial Processing System Release III

Data Processing Services, Inc. has announced Release III of its FIN/38 Financial Processing System, which runs on the IBM System/38. The FIN/38 package consists of payroll, accounts payable, general ledger and fixed assets applications.

Features include multi-company support and user-defined field lengths. Release III provides options for seasonal curve budgeting, time-saving data entry and additional auditing functions.

Each module in the FIN/38 package is priced at \$4,500. The entire package, including source code and documentation, costs \$16,000.

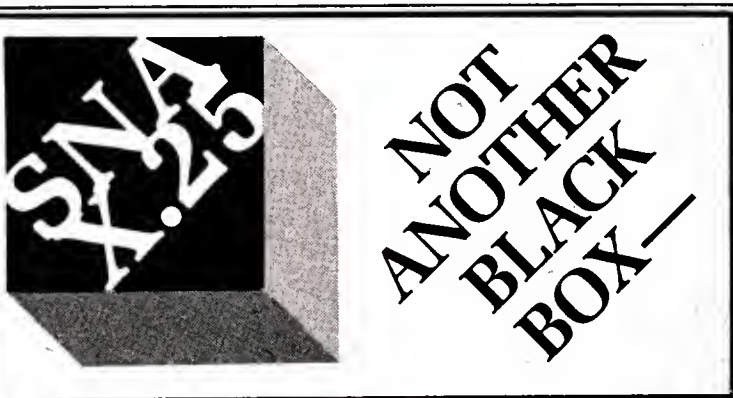
Data Processing Services, 8604 Allisonville Road, Indianapolis, Ind. 46250.

VG SYSTEMS, INC. Clip/Zoom

VG Systems, Inc. has announced its Clip/Zoom processing software module for use with its VG 8250 vector graphics system, which is a plug-compatible replacement for IBM's 3250 display system that can be used with IBM and IBM-compatible processors.

According to a spokesman, the Clip/Zoom module off-loads the computer-aided design and manufacturing (CAD/CAM) windowing function from the mainframe for savings in CPU processing time. The module is designed for use with the VG 8250 Remote Display Control Unit, and it permits CAD/CAM or computer-aided engi-

Continued on page 59



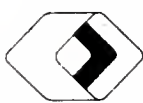
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- 3270 BSC Emulation
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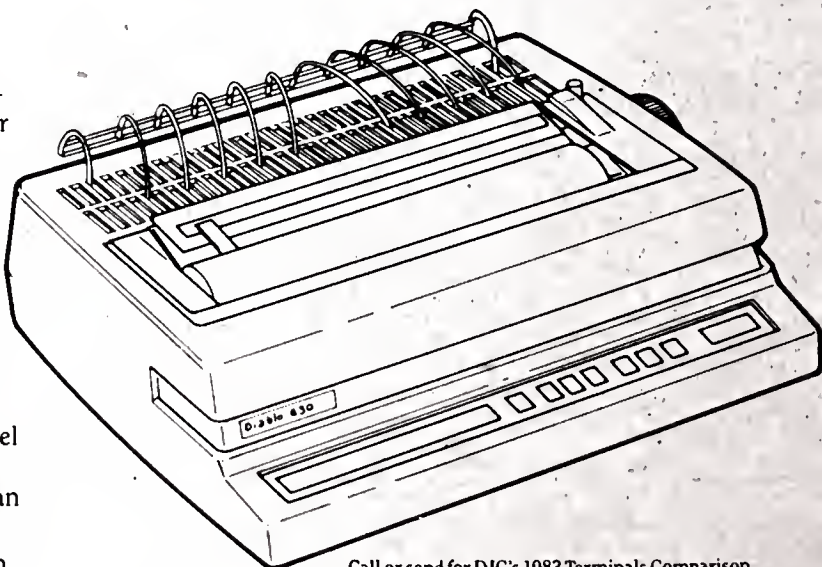
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Those same engineers have been at it again. This time, compacting VAX architecture into the MicroVAX I™ system.

A micro by every measure, the MicroVAX I system nevertheless delivers all the versatility and speed you've come to expect from its larger namesakes. It guarantees both hardware and software compatibility with other VAX computer family members. It lays claim to the same treasure chest of development tools, utilities and languages. It provides access to the same impressive library of proven applications.

With the MicroVAX I system, the industry's premier 32-bit architecture has been miniaturized by VLSI technology. Along the way, Digital's engineers dramatically reduced something else: the cost.

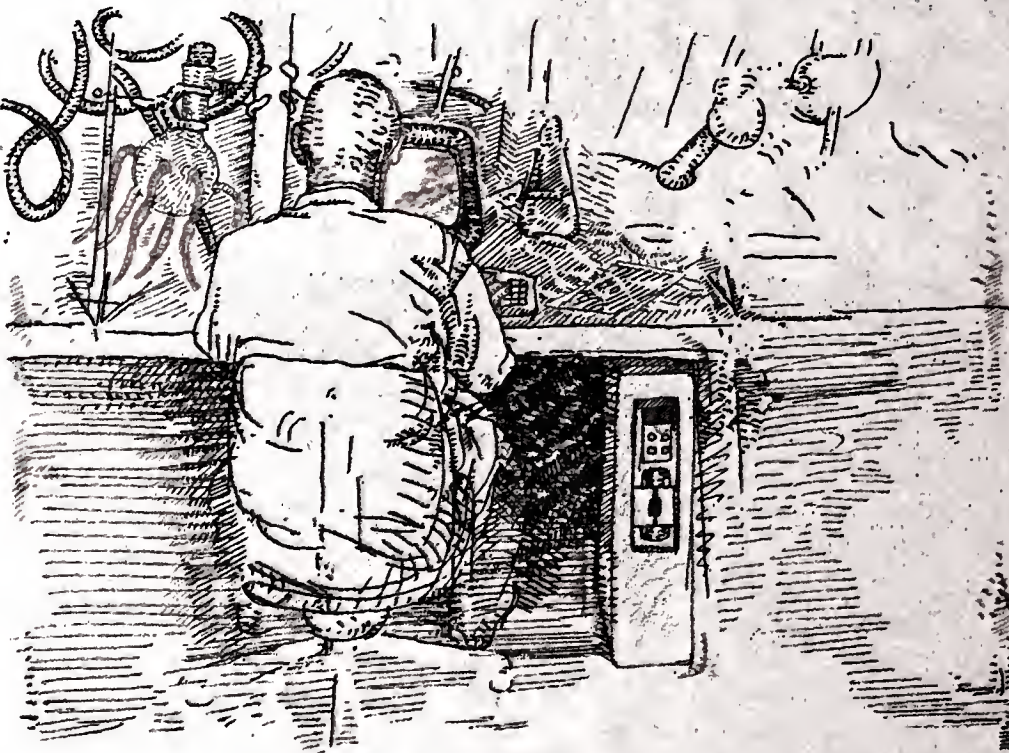
Entry into the celebrated VAX computing family is now possible for as little as \$10,000.

THE UNCOMMON BENEFITS OF VAX ENGINEERING HERITAGE.

A genuine VAX computer, the MicroVAX I system has

been, in a sense, already proven at tens of thousands of VAX installations.

Its high bit-efficiency, for example, is achieved in true



VAX architectural fashion — by accommodating data types ranging from one to 128 bits, and 21 distinct addressing modes. You can select precisely what your programs call for. The system boasts over four gigabytes of address space, made possible by full virtual memory management.

The MicroVAX I system also inherits the elegant VAX instruction set. Some three hundred separate instructions. This gives developers exquisite control over the micro, and in turn, gives the system extraordinary applications flexibility.

Bit efficiency for speed, elegant instructions for flexibility, and consequent growth potential are the heart of VAX architectural excellence. They

free MicroVAX I system users from memory overlays, program segmentation and other encumbrances of competitive 16- and 32-bit micros. VAX

system sophistication means compact compilers and operating systems. It means applications that execute with speed.

The MicroVAX I computer enters the marketplace prepared both to live up to the legendary status of its predecessors, and to make a name for itself.

HARDWARE ENGINEERED TO GIVE YOU BIG SYSTEM PERFORMANCE.

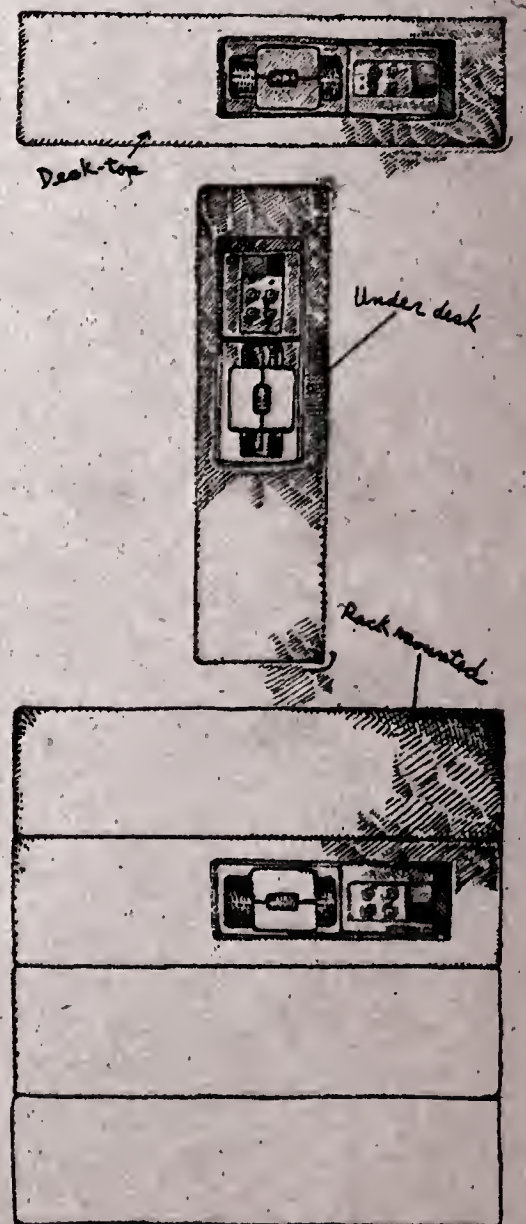
To be sure, the MicroVAX I computer is a true micro. It fits under the desk, on the desk, or most compactly of all, taking up just 5 1/4" of height in a 19" rack.

The MicroVAX I system delivers over 35% of the raw

power of Digital's VAX-11/780 computer. Enough to satisfy your most demanding super-micro applications. Enough to comfortably support up to five users.

There is big system capacity: one-half million bytes of physical memory is standard, and expandable to four megabytes. For highly technical applications, MicroVAX I systems also come standard with support for both single and double precision floating point arithmetic.

To enhance the already impressive execution speed, Digital's engineers even put in



an eight-thousand byte direct-mapped cache memory.

**SYSTEM SOFTWARE
ENGINEERED TO GIVE
YOU UNMATCHED
VERSATILITY.**

While ordinary micros give you just one, often thinly supported operating environment, the MicroVAX I system gives you a choice.

There is the MicroVMS™ operating system, Digital's famous VMS™ general-purpose system repackaged for the MicroVAX I computer. Within the storage capacity of your configuration, it will execute any user-mode VMS application. Unaltered. This opens up the complete range of unique and highly specialized Digital and third party applications and tools.

For incomparable economy, the MicroVMS operating system has been packaged by function into modules. You buy just the modules you need for your environment, then tailor the system to your application. The basic system module contains all the capabilities necessary to run applications. You can then add a program development module, a choice of networking modules, programming languages, and other optional products simply and easily. Because you never buy what you don't need, up-front investment is minimized and system overhead is reduced.

For realtime control, distributed computing and network-based multiprocessing, there is the VAXELN™ realtime programming toolkit. It gives you access to all the productivity tools of VMS. Applications developed on VMS with VAXELN software can be transported to other VAX or MicroVAX I target systems for execution. The applications do not need an underlying operating system.

The MicroVAX I system will excel in a variety of applications settings. It is a team com-

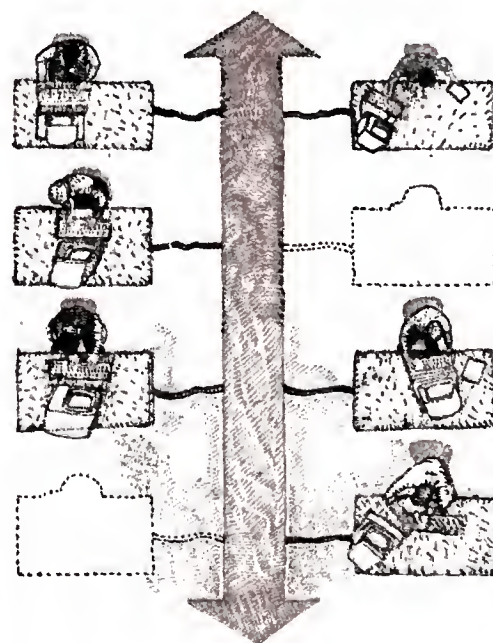


puter in business. A network node in process control. A technical workstation. It is a compact, high-powered computer that can be taken on location for seismic, marine and field engineering applications.

**DIGITAL'S Q-BUS
ENHANCED FOR HIGH
PERFORMANCE I/O.**

Inexpensive and high performing, the Q-bus™ data path has become a leader in the micro world and the choice of Digital's engineers for the MicroVAX I microcomputer.

The Q-bus data path now performs block mode data transfer, substantially improving its efficiency. The bus delivers transfer rates of over three



million bytes per second.

There are hundreds of devices and interfaces available for it. You may already have an investment in Digital's Q-bus structure. If so, a MicroVAX I system affords an easy and economical upgrade path to 32-bit power. For design start-ups, it gives you ready access to a complete range of supplementary products.

**NETWORKING:
YOUR WIDE-RANGING
PRESENT, YOUR FAR-
REACHING FUTURE.**

The MicroVAX I system is a full-fledged member of one of the broadest ranges of compatible hardware ever sold. With it, you may employ a single, consistent computing strategy from micros to huge clustered systems.

(Continued overleaf)

You can progress along this computing path with ease, transporting programs and data among systems as your needs dictate.

As your micro applications grow, for example, it is easy and cost-effective to transport programs and files from the MicroVAX I computer to larger systems. Conversely, a MicroVAX I system becomes an ideal target for programs developed on a bigger CPU. The MicroVAX I computer can communicate with all of Digital's other computing systems via DECnet™ software. As part of a DECnet network, MicroVAX I systems can also be linked with highly efficient gateways leading to IBM's SNA™ networks and X.25 public packet switching networks.

Within smaller geographic areas, the MicroVAX I system connects to Ethernet (supported by DECnet software) by simply clamping onto the cable. In doing so, it becomes the first ready-to-implement microcomputer for building high-speed data communications and powerful processing into local area networks. Both MicroVMS and VAXELN software support the Ethernet connection.

ENGINEERED-IN RELIABILITY; INCOMPARABLE SUPPORT.

Like all of Digital's products, the MicroVAX I microcomputer is engineered for quality and produced to Digital's enviably high manufacturing standards.

The MicroVAX I computer incorporates many built-in system diagnostics. The most powerful of these is a micro-code verify that performs a CPU self-test each time the computer is powered up. Many diagnostics run concurrently with normal processing, so if a failure does occur, it can be corrected quickly.

Every detail that helps

assure reliability has been attended to. The system's 230-watt power supply, for instance, features thermal shutdown, overvoltage and overcurrent protection, a/c input transient suppression, and a minimum four millisecond powerdown time.

Overall, modular con-

struction makes system service both rapid and inexpensive.

The MicroVAX I system is backed by one of the industry's most experienced small system support organizations. Digital pioneered on-site service with guaranteed up-time contracts and a selection of field services, software support

programs, and user training agreements so comprehensive they suit virtually every need.

No other 32-bit microcomputer in history has ever offered its users greater potential for success.

While others promise performance, you'll be working with the industry standard 32-bit engine.

While others promise software, you'll have a choice of operating environments and programming tools.

And while others promise support, you'll be dealing with a company that has over 475 support offices in 44 countries.

BEST ENGINEERED MEANS ENGINEERED TO A PLAN.

The MicroVAX I computer, like every Digital hardware and software product, is engineered to conform to an overall computing strategy. This means our systems are engineered to work together easily and expand economically. Digital provides you with a single, integrated computing strategy direct from desktop to data center, from chips to huge multiprocessing clusters.

As its name suggests, the MicroVAX I microcomputer is the beginning of a complete system and component program based on Digital-developed VLSI technology.

The MicroVAX I system is shipping now.

For additional product information or the name of your nearest Digital sales office or Authorized Industrial Distributor, call 1-800-DIGITAL, extension 225. Or write: Digital Equipment Corporation, Dept. MV1, 200 Baker Avenue, West Concord, Massachusetts 01742.

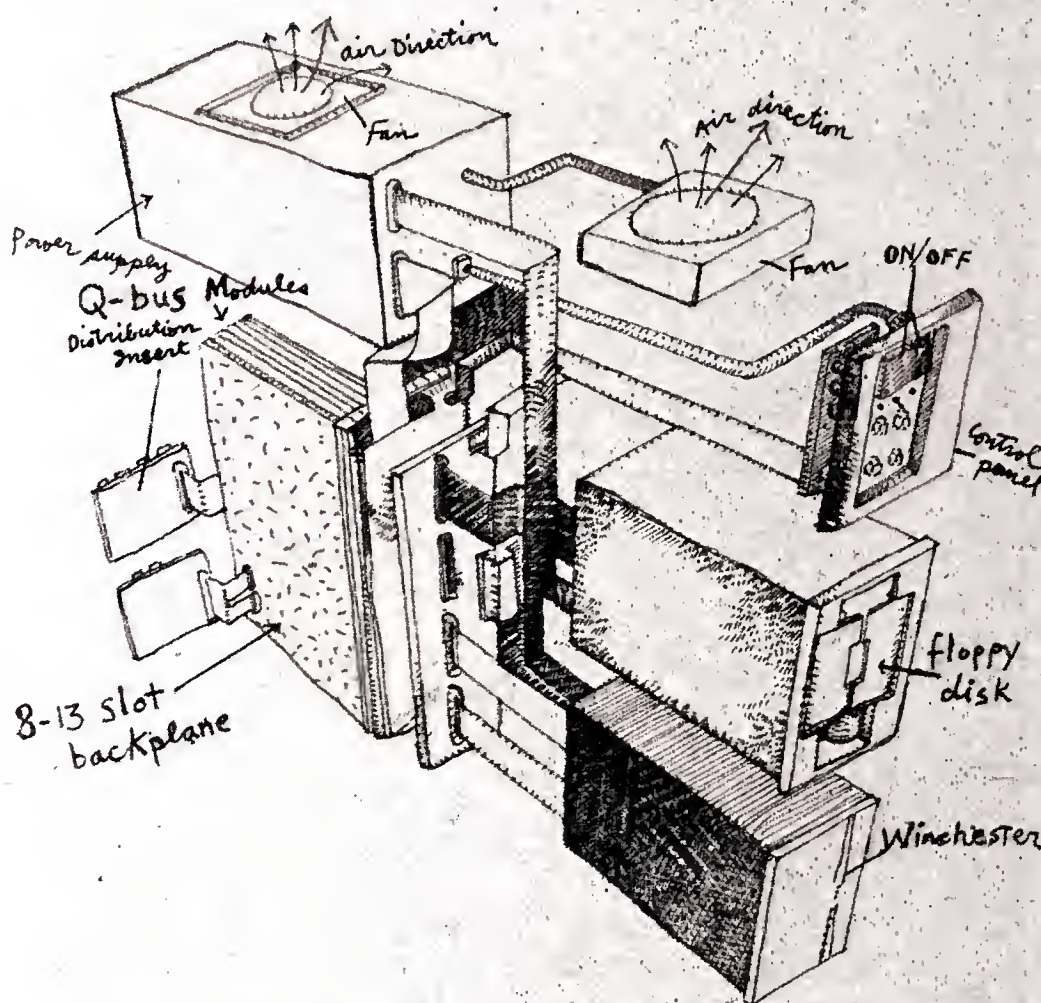
THE BEST ENGINEERED COMPUTERS IN THE WORLD.

digital™

DIGITAL'S MICROVAX I TECHNICAL SUMMARY

SYSTEM CONFIGURATION

Basic system for \$9,995 (U.S. price, one only) includes: Two-board CPU, one-half Mbyte main memory (expandable), modular power supply, I/O port, and eight-slot Q-bus backplane. A disk-based system at \$13,880 (U.S. price, one only) includes a 10 Mbyte fixed Winchester (expandable) and an 800-Kbyte floppy drive. Volume OEM discounts apply.



HARDWARE OPTIONS*

| | Optional | System Maximum |
|-----------------|---|----------------|
| Memory: | 256 KB, 512 KB with parity | 4 MB |
| Floppy Disks: | 2 x 400 KB | 4 x 400 KB |
| Fixed Disks: | 11 MB, 31 MB | 62 MB |
| Communications: | 1, 4, 8 lines Asynchronous Ethernet Synchronous | |

*All configurations not supported by all operating systems.

SOFTWARE

Operating Environments: MicroVMS™, VAXELN™
Supports Applications Written In: BASIC; COBOL; FORTRAN; PASCAL; PL/I; C; DSM; MACRO; LISP; OPS/5; DIBOL; RPG II.

MECHANICAL SPECIFICATIONS

| | Width | | Height | | Depth |
|--------------|------------------|---|------------------|---|------------------|
| Rack Mount: | 48.3 cm 19" | x | 13.3 cm 5.25" | x | 64.8 cm 25.5" |
| Floor Stand: | 25.4 cm 10" | x | 62.3 cm 24.5" | x | 72.4 cm 28.5" |
| Table Top: | 54.6 cm 21.5" | x | 15.2 cm 6" | x | 68.5 cm 27" |

WEIGHT (chassis only): 22.68kg (under 55 lbs.)

OPERATING TEMPERATURE: 15-32°C (59-90°F) at sea level.

OPERATING HUMIDITY: 20-80% relative humidity, noncondensing.

SOFTWARE & SERVICES

Continued from page 54

neering operators to scale up or pan a drawing to examine details.

The Clip/Zoom module allows designers to window locally using standard display station devices and windowing conventions. The module can be used to scale up any area of a displayed drawing as much as 8:1 and to move the selected drawing area to any position on the display.

The VG Clip/Zoom module is priced between \$4,000 and \$7,500.

VG Systems, 21300 Oxnard St., Woodland Hills, Calif. 91367.

DATELINE TECHNOLOGY, INC. Star-One

Dateline Technology, Inc. has announced the availability of its Star-One multiuser word processing program for Prime Computer, Inc.

Star-One's features reportedly include horizontal and vertical scrolling, global replacement functions and a spelling checker. According to the vendor, the package contains a similar command structure to Micropro International Corp.'s Wordstar program.

The package is available for all Prime systems except the Prime 300, the vendor said. A single-user version of Star-One costs \$695. A multiuser version is priced at \$2,495.

Dateline Technology, No. A-1, 13401 Bel-Rel Road, Bellevue, Wash. 98005.

J&K COMPUTER SYSTEMS, INC. FMS/38

J&K Computer Systems, Inc. has announced the Financial Management System (FMS/38) for governmental and fund accounting institutions using the IBM System/38.

According to a spokesman, FMS/38 consists of modules for general ledger, purchasing, receiving, accounts payable, cash disbursements, cash receipts and bank reconciliation. The modules are said to be interactive and driven by user-defined options. The general ledger module is based on an account number format with up to nine account elements. It provides full budget control and reporting, the spokesman said.

The purchasing module is said to allow full encumbrance accounting for both detail and blanket type purchase orders, and detail from the module becomes the basis for the receiving and accounts payable transactions. The cash disbursements module supports multiple bank accounts and allows for the use of custom check stock.

FMS/38 has a one-time license fee of \$24,000.

J&K Computer Systems, Suite 270, Mesa Executive Park, 1255 W. Baseline, Mesa, Ariz. 85202.

MADIC CORP. Modular pricing of Madic System

Madic Corp. announced that its integrated materials planning program, called the Madic System, will be priced on a modular basis starting July 1. Time-sharing prices are not affected, a vendor spokesman said.

The modules have been organized into four groups: the Core manufacturing system, an advanced manufacturing system, a general accounting system and a decision support system.

Madic customers will now have the option of purchasing the vendor's

Core manufacturing system on a Prime Computer, Inc. 2250 superminicomputer or an Applied Digital Data Systems, Inc. Mentor series superminicomputer for a license fee of \$50,000, the spokesman said.

The license fee for the full system on a Prime 9950 is \$200,000. Extended application prices range from \$5,000 to \$24,000.

Madic, 3960 Freedom Circle, Santa Clara, Calif. 95054.

INFO PROJECTIONS, INC. Info System Plus

Info Projections, Inc. has announced Info System Plus, a modular mail-order fulfillment package for the IBM System/34 and 36.

According to a spokesman, the menu-driven order processing system

includes five modules designed for use by direct mail businesses: on-line order processing, on-line customer service, inventory and backorder control, list maintenance and a physical inventory system.

Optional enhancement modules for the system include: sales and source code analysis, page and square-inch analysis, catalog request, hold system, returns system, refunds system, accounts receivable system, accounts payable system, purchase order system and yearly maintenance.

Info System Plus reportedly includes custom format features for invoices, backorder cards and list maintenance.

The system is priced at \$10,000, the vendor said.

Info Projections, P.O. Box 3369, Evergreen, Colo. 80439.

EXPERTWARE, INC. Power

Expertware, Inc. has announced the Project Observation Workbench and Evaluation Reporter (Power) system for the IBM Personal Computer and compatible microcomputers.

Power is a diagnostic and decision support tool for software managers. The Power system permits simultaneous evaluation of a software development process by project evaluators who can analyze results through the system's more than 50 tables and displays.

The Power system is priced at \$9,500.

Expertware, Suite 900, 2672 Bayshore Frontage Road, Mountain View, Calif. 94043.

See **TOOLS** page 60



FALCON

on-line data entry that's above and beyond the ordinary

For an easy-to-use, completely interactive data entry system that's designed especially for the end user, you need FALCON.

FALCON operates standalone or as a task under CICS and the other major TP monitors giving you total flexibility and performance. It supports both DOS and OS operating systems to provide versatility and upgrading capabilities. And FALCON automatically converts VIDEO/370 formats.

FALCON's high-level security system protects your data against unauthorized access. It lets you decide which operators can use specific functions. And with FALCON you never worry about losing data. If the system fails, all data is recovered. If a terminal breaks down, just go to another terminal, rescue your data, and start working — right where you left off.

FALCON's on-line instructions help you design screen formats, enter and verify data, maintain files, create tables, and submit your own jobs. Just touch a key, tell FALCON what you want to do, and the instructions appear right on the screen.

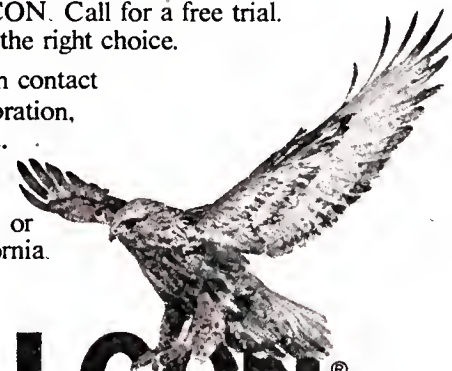
With FALCON, you can make decisions based on the productivity of your operators without leaving your office.

You can monitor the progress of all active terminals and view job accounting statistics on-line.

FALCON's built-in edits include table lookup, range testing, defaults, balancing, and much more. FALCON goes far beyond other data entry systems to let you use your terminal as an operator's console and view the activity and contents of the input and output queues.

So make sure you're getting the most from your resources. Choose FALCON. Call for a free trial. You'll be glad you made the right choice.

For more information contact
Phoenix Computer Corporation,
11949 Jefferson Boulevard,
Culver City,
California 90230.
Toll free (800) 255-5049 or
(213) 827-4500 in California.



FALCON®

SOFTWARE & SERVICES

TOOLS from page 59**GEOGRAPHIC SYSTEMS, INC.**
Geostar

Geographic Systems, Inc. has introduced Geostar software to perform sales territory analysis and realignment based on market data and/or user-supplied data. The package runs on IBM 4300 series and larger machines and

Digital Equipment Corp. VAX-11/730 and larger processors.

Geostar is said to be an English-language, menu-driven software package that can be used to build or realign market territories based on supply and demand market data.

The Geostar model is priced at \$25,000, the vendor said.

Geographic Systems, 204 Andover St., Andover, Mass. 01810.

DATA BASE MANAGEMENT SERVICES**BRITTON LEE, INC.**
Mirrored Disk

Britton Lee, Inc. has announced the Mirrored Disk option, said to increase data reliability and accessibility for the company's 500/1 and 500/2 series of Intelligent Database Machines (IDM).

The feature is designed to provide protection against media failures and disk crashes by duplicating data bases on a redundant set of disk drives, according to the vendor.

The Mirrored Disk option costs \$7,500, and the controller recommended for purchase with the option costs \$8,000, the vendor said.

Britton Lee, 14600 Winchester Blvd., Los Gatos, Calif. 95030.

PRODUCTS DIVERSIFIED, INC.
The Connection

Products Diversified, Inc. has announced a software package that will interface the Alpha Microsystems, Inc. family of supermicrocomputers to the Britton Lee, Inc. family of Intelligent Database Machines (IDM).

Called The Connection, the software package gives micros the ability to manipulate large data bases, a spokesman said. The Alpha Microsystems computers used in The Connection are Motorola, Inc. 68000-based S100-bus machines.

The Connection software package is priced at \$30,000; a complete system including Alpha microcomputers, software and the IDM starts at \$125,000, the vendor said.

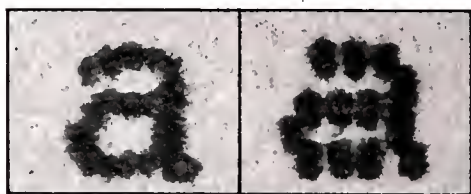
Products Diversified, Suite 406, 9720 Beechnut, Houston, Texas 77036.

INTRODUCING PINWRITER DOT MATRIX PRINTERS. AND A HEAD TO HEAD COMPARISON OF WHY THEY'RE BETTER.

Our new multi-mode Pinwriter® dot matrix printers have a lot in common with our Spinwriter® letter-quality printers. Designed and manufactured with the same quality and reliability that has made our Spinwriters the best selling letter-quality printers to PC users. We also gave them many unique capabilities you won't find on other dot matrix printers. Especially at such an affordable price.

More dots, more fonts, more versatility.

One thing that makes Pinwriters stand out from other



Our exclusive 18-pin print head is graphically sharper than a 9-pin printer, as this unretouched photo shows.

dot matrix printers is our printhead. It has 18 pins. Compared to the usual nine. It also has true dual-pass printing. The result: an amazing 240x240 dots per inch.

The quick brown fox

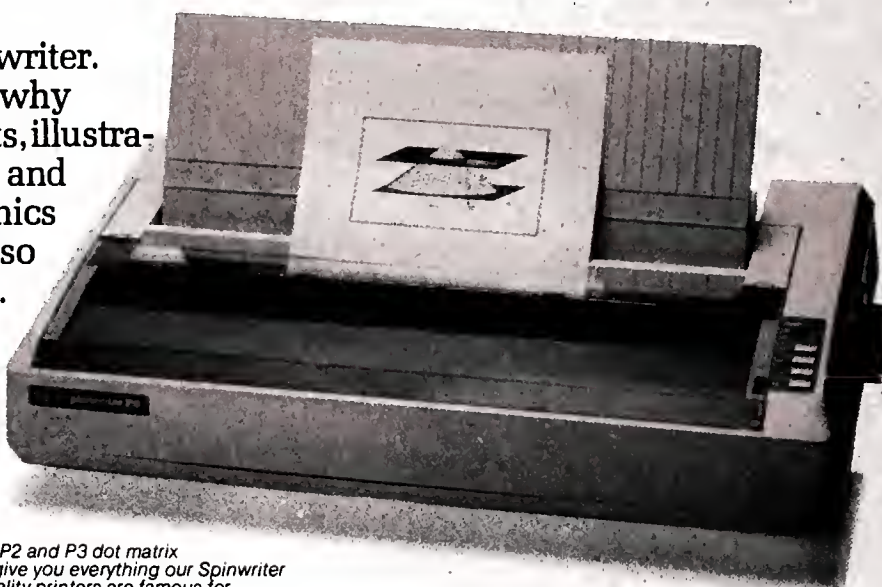
The quicker brown fox

The quickest brown fox

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Our new P2 and P3 dot matrix printers give you everything our Spinwriter letter-quality printers are famous for, including forms handlers.

Pinwriters have something else no other dot matrix printers have. Eight operator-selectable print styles, plus as many as 11 international character sets. And an LED display to tell you which style has been selected.

What else? Three printing speeds. 300, 900 or 1800 words per minute to handle all your printing needs from word processing to data processing.

Plus, a variety of forms handlers to speed up all your paperwork. All made and designed by NEC. And all easily installed and changed by the operator.

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show you how clearly superior the Pinwriter is compared to other dot matrix printers. And how versatile it is.

For the Pinwriter retailer nearest you, call 1-800-343-4419. In Massachusetts call 617-264-8635.

And find out why more and more PC users are saying, "NEC and me."

NEC AND ME

NEC Information Systems, Inc.
1414 Mass. Ave.
Boxborough, MA
01719

**AI** from page 49

because "some of this stuff is so imprecise," the company does feel it will get a reasonable return on its investment.

ADL is projecting "tremendous growth" in the AI market, according to Karl Wiig, director of ADL's AI program. The company has projected that AI could be an \$11 billion market by 1990 — or 4.5% of \$267 billion total projected 1990 computer industry revenues.

Schoen cautioned that so far, few "concrete examples of documented commercial success" are available. However, Schoen outlined a number of new products for Litton's major markets that have been initiated or are under study. For the military market, they include electronic warfare, radar analysis, intelligence analysis, flight systems and ship design. For the industrial market, projects being evaluated or initiated include factory automation simulation, machine tool control, seismic data analysis, training systems and medical electronics.

And internally at Litton, allocation of production equipment, software design, equipment maintenance and an electronic catalog are all areas being examined for AI applications, according to Schoen. The catalog could be an effective marketing tool, Schoen said, because many of Litton's products (such as very large cameras) are impractical to demonstrate.

Pick the first AI application very carefully, Schoen advised the corporate executives. If the first project is too ambitious and it fails, "it's a tough road to come back," he said.

Lastly, adapt the AI decision-making process to the company's "corporate culture" or own way of doing things.



IS YOUR MAINFRAME HOLDING BACK FINANCIAL INFORMATION?

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When you get the new Digital Rainbow 100B™ from Continental Resources, you get all the exceptional Rainbow features plus expanded 128KB base memory in a floppy-based system and much more! **FREE 192K memory board** and **FREE LA50 printer** from Continental*. **One full year of on-site service** from Digital.

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*Offer expires June 30, 1984

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COMMUNICATIONS

Decision on proposed standard expected soon



DATA STREAM

John Dix
CW Senior Editor

Efforts to standardize token ring local-area networks, the type endorsed by IBM, are nearing pay-off. Opinions on the standard are being balloted now, and the results of that survey should be gathered and tallied within a few weeks.

The standard is being developed by the Institute of Electrical and Electronics Engineers (IEEE) in its 802 project, where the token-passing ring network is known as the 802.5. Local network standards that have already been approved by the IEEE include the 802.3 Ethernet-like standard and the 802.4 token-passing bus standard.

Recently, 802.5 was passed into the Technical Committee on Computer Communications within the IEEE for comment. Each of the roughly 500 individuals in that committee have been asked in a ballot to vote on the proposal. A member can vote for the standard, against it or abstain. Those who vote

against the standard have to outline changes they want to see.

Interestingly, before 802.5 went into balloting, the 802 executive committee sent the proposal back to the 802.5 working group that developed it, asking it to reconsider a transmission specification.

The executive committee — which is comprised of the chairmen from each of the eight 802 working groups, the chairman of the 802 project, a secretary, a treasurer and two former 802 officials — asked the group to consider adhering to the transmission bit order specified in other 802 standards.

Landslide victory

In a 28 to 1 vote, the 802.5 working group said it was in favor of retaining the bit order originally proposed, which called for the most significant bit to be transmitted first, as opposed to transmissions headed by the least important bit.

The executive committee agreed to this, but said that the standard document would have to have a notice on it that would warn users that inter-networking might require that bit direc-

tions be flipped.

This may or may not cause problems in the balloting stage, which is supposed to be concluded within a few weeks. Maris Graube, manager of corporate interface engineering at Tektronix, Inc. and acting chairman of the IEEE 802, is optimistic that 802.5 will be received favorably.

"It [802.5] is in reasonable technical shape, and it looks like it's complete," Graube said, "but it's hard to say when you have a large number of other people reviewing it. I think most of the issues have been put to bed."

When returned, the 802.5 ballots will be tallied and the criticisms taken into account. If the problems can be resolved without offending the voters who had already cast an affirmative vote and 75% of all voters agree to the proposal, 802.5 will go to the IEEE standards board. That board meets four times a year, and Graube said he hoped everything would go smoothly enough for the 802.5 standard to be presented at its September sitting.

Once ratified as an IEEE standard, 802.5 would be presented to the International Standards Organization.

AT&T's maintenance service boasts custom-tailoring and time savings

MORRISTOWN, N.J. — AT&T Information Systems, Inc. recently announced a maintenance service, Service-Plus, whereby it will field all maintenance requests and coordinate the upkeep of customers' communications lines and AT&T equipment.

When called in by a Service-Plus customer, AT&T will isolate troubles to line or equipment, repair its own equipment or refer line and other equipment troubles to the appropriate company and oversee resolution of the problem.

The service is intended to save customers time and eliminate the need to deal with more than one vendor for equipment and lines. It is available now through AT&T Information Systems' marketing branch offices and business service and sales centers.

The company also announced several maintenance plans that are said to allow customers to tailor service coverage to their individual needs. They include:

- **Business Day Service**, a standard Monday-Friday, 8 a.m. to 5 p.m. maintenance agreement whereby AT&T agrees to respond within four hours for major system failures and 24 hours for minor failures.

- **Around-the-Clock Service**, which extends business day service to 24 hours per day and seven days per week for major system failures.

- **Dedicated Service**, with full-time systems technicians on-site for equipment moves and changes and for emergency maintenance.

- **Per Occurrence Service**, under which billing is on a time/materials basis.

Service-Plus costs \$3.75 per month per line, except with AT&T's Centrex system, where the service costs \$1.50 per month per line.

As an example of pricing for the other services: Business Day Service for a typical three-line key station system costs

See AT&T page 68

AT&T, Rolm PBX users groups formed

LOUISVILLE, Colo. — Two informal user groups formed at the 1984 International Communications Association (ICA) conference are seeking users of AT&T Information Systems Dimension System 85 Release 2 and Rolm Corp.'s VL/CBX to share information about their systems.

Approximately 30 Rolm VL/CBX users met at the ICA meet and drafted a letter to Rolm officials outlining their concerns about maintenance, pricing, equal access and misunderstandings of system functionalities.

Several System 85 Release 2 users also

met at the ICA conference and reported that they hope to meet with AT&T officials, other System 85 Release 2 users and people with systems on order, to discuss functions that they would like to see be supported by the system.

Both groups are undecided about formalizing their associations, but plan to meet at ICA in Dallas in 1985.

Prospective members can obtain information from William E. Darden III, manager of corporate telecommunications, Storage Technology, 2270 S. 80th St., Mail Drop TC, Louisville, Colo. 80028.

Contel and Bridge combine efforts to offer network

GREAT NECK, N.Y. — Contel Information Systems, Inc. announced recently that it has entered a joint effort with Bridge Communications, Inc. to combine their local network technologies into a network offering that is scheduled to be available later this year.

Contel, a subsidiary of Continental Telecom, Inc., signed a three-year, \$10 million OEM agreement with Bridge for the supply of local net components that will be used in the Contel supplied network.

Those components reportedly will include Bridge's IEEE 802.3-compatible baseband network products, such as its microprocessor-based 16-bit bus interface unit with the TCP/IP computer interface protocol and a series of gateway servers.

These products will be combined with Contel's broadband network technology. In particular, Contel will provide network control, RF broadband interfaces, Tempest security, broadband interchannel bridges and software technology.

Dr. Howard Frank, president and chief executive officer of Contel Information Systems, said that the resulting network is intended to combine baseband and broadband technologies.

According to plans, the network will use a broadband backbone to interconnect baseband feeder nets.

The first products based on the agreement with Bridge are scheduled to be available in the third quarter. Contel will market the products directly to end users, Frank said.

Contel Information Systems was formed in 1982 by the merger of Network Analysis Corp. and International Computer Co. The firm is located at 130 Steamboat Road, Great Neck, N.Y. 11024.

INSIDE

Voice/Data
Communications/64

Protocol
Converters/64

Network Services/68

Test Equipment/68

COMMUNICATIONS

VOICE/DATA
COMMUNICATIONSDIGITAL EQUIPMENT CORP.
Telepro

Digital Equipment Corp. has introduced a layered applications software package called Telepro that is said to provide telecommunications and finance managers with information on the use of private branch exchanges (PBX).

Telepro runs under the DEC VAX-11 VMS Version 3.4 and DEC RSX-11M Version 4.0 operating systems and is designed to operate with a PBX as an attached station message detail recorder. The software reportedly generates cost allocation and traffic management reports, providing the information needed to evaluate use and adequacy of existing telephone networks. It also enables managers to evaluate the effect of company growth on calls being made and the efficiency of a specific PBX arrangement.

Telepro for RSX-11M is priced at \$7,700, and for VMS it costs \$12,700.

DEC, 146 Main St., Maynard, Mass. 01754.

AMERICAN TELECOM, INC.
Focus data-switching PBX

American Telecom, Inc. has announced that it will support the Computer-to-Private Branch Exchange

(PBX) Interface (CPI) standard as proposed by Northern Telecom Ltd. and Digital Equipment Corp.

The vendor reported that it will develop a CPI interface for its Focus digital PBX, permitting multiple circuits or terminals to be supported through a single T1 channel.

It is scheduled to be available in late August for a price of about \$800/line, depending upon configuration.

American Telecom, 3190 Mira Loma Ave., Anaheim, Calif. 92806.

LEE DATA CORP.
Model 411

Lee Data Corp. has announced a dual-host controller designed to let terminal users interconnect concurrently with two remote IBM or IBM-compatible mainframes and up to 16 asynchronous hosts.

The Model 411 connects simultaneously with IBM mainframes and asynchronous hosts through remote communications interfaces and to enable users to switch between systems through keyboard commands. It is designed to accommodate up to 32 terminals via bisynchronous or Systems Network Architecture/Synchronous Data Link Control protocols in the IBM 3270 mode and up to 16 terminals in asynchronous mode.

Model 411 costs \$17,435. Lease rates are \$655/mo on a three-year basis and \$781/mo on a two-year basis.

Lee Data, 7075 Flying Cloud Drive, Minneapolis, Minn. 55344.

PROTOCOL
CONVERTERSINNOVATIVE ELECTRONICS,
INC.
MC 80/700

Innovative Electronics, Inc. has announced a compact protocol conversion unit said to allow high-performance, low-cost printers and other hard-copy output devices to operate in an IBM 3270 environment.

The MC 80/700 emulates an IBM 3287 printer and enables connection of popular high-speed printers at a cost below comparable IBM products, according to a spokesman for the vendor.

The MC 80/700 is self-contained and user-installable using a standard

Type A coaxial connection to the IBM 3274/76 or a compatible cluster controller, the vendor said.

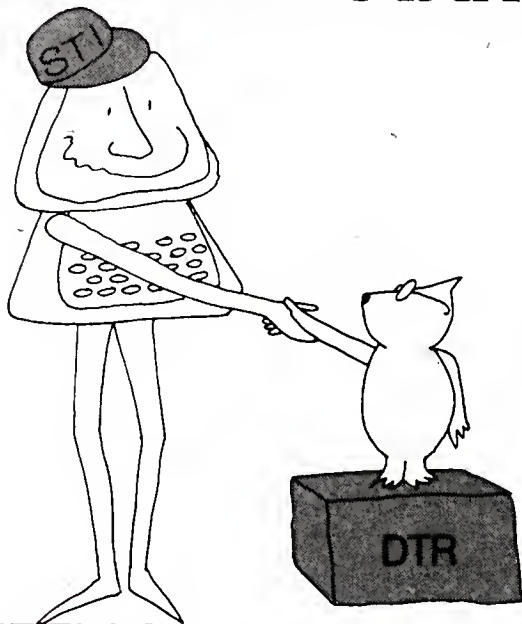
It is compatible with bisynchronous and Systems Network Architecture/Synchronous Data Link Control environments, according to the spokesman.

Output can be in a formatted mode of 40, 64 or 80 char./line or in an unformatted mode of up to 132 char./line.

The product is also said to support a transparent mode of operation, thereby allowing attachment of almost any Ascii output device required for specialized host applications.

The MC 80/700 is priced at \$1,495, the vendor said.

Innovative Electronics, 4714 N.W. 165th St., Miami, Fla. 33014.

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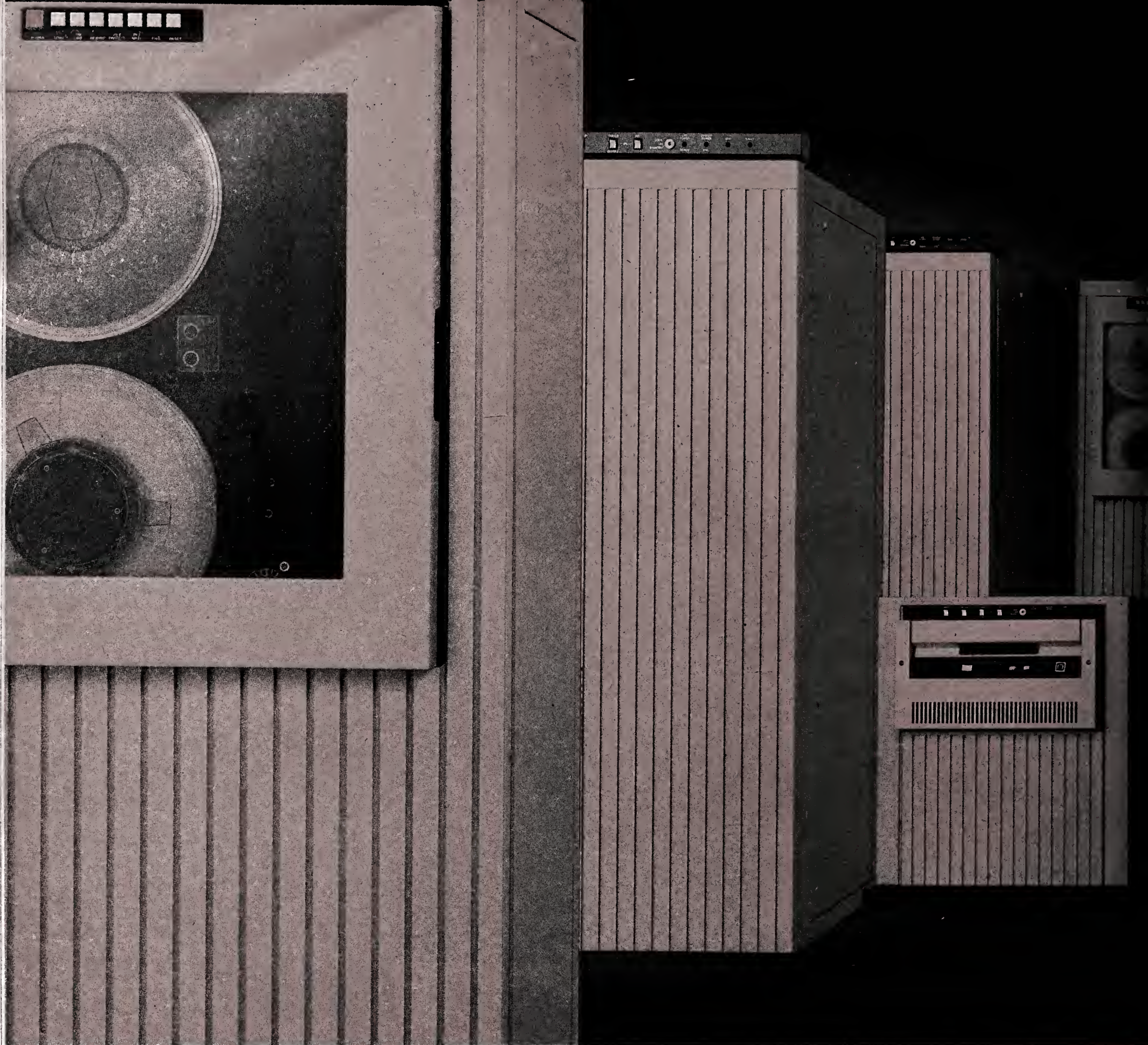
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COMMUNICATIONS

NETWORK SERVICES

STRATUS COMPUTER, INC.
Tymnet certification

Stratus Computer, Inc. has announced that its Stratus/32 Continuous Processing Systems have received certification from Tymnet, Inc. for connection to the Tymnet X.25 public packet-switched

network system.

Certification enables Stratus systems to be connected to the packet net through its Stratanet or X.25 software products, providing an alternative to private-line networks, according to the vendor.

Stratanet costs \$7,000; the X.25 interface software costs \$5,000.

Stratus Computer, 17 Strathmore Road, Natick, Mass. 01760.

TEST EQUIPMENT

AVANT-GARDE COMPUTING, INC.
Feature P

Avant-Garde Computing, Inc. has announced a polling feature for its Tempo II response-time monitor for individual terminals.

Feature P reportedly allows an operator of a host computer to poll a local or re-

mote Tempo monitor and to extract response time statistical information gathered at the user's location.

Equipped with an Ascii card and an RS-232 connector, Tempo II with polling attaches to a modem or modem eliminator so the network manager can poll each Tempo unit for statistical reports and individual response times, according to the vendor.

Tempo II with P is priced

at \$4,150, the vendor said.

Avant-Garde Computing, 8000 Commerce Pkwy., Mount Laurel, N.J. 08054.

PARADYNE CORP.
Analysis 550

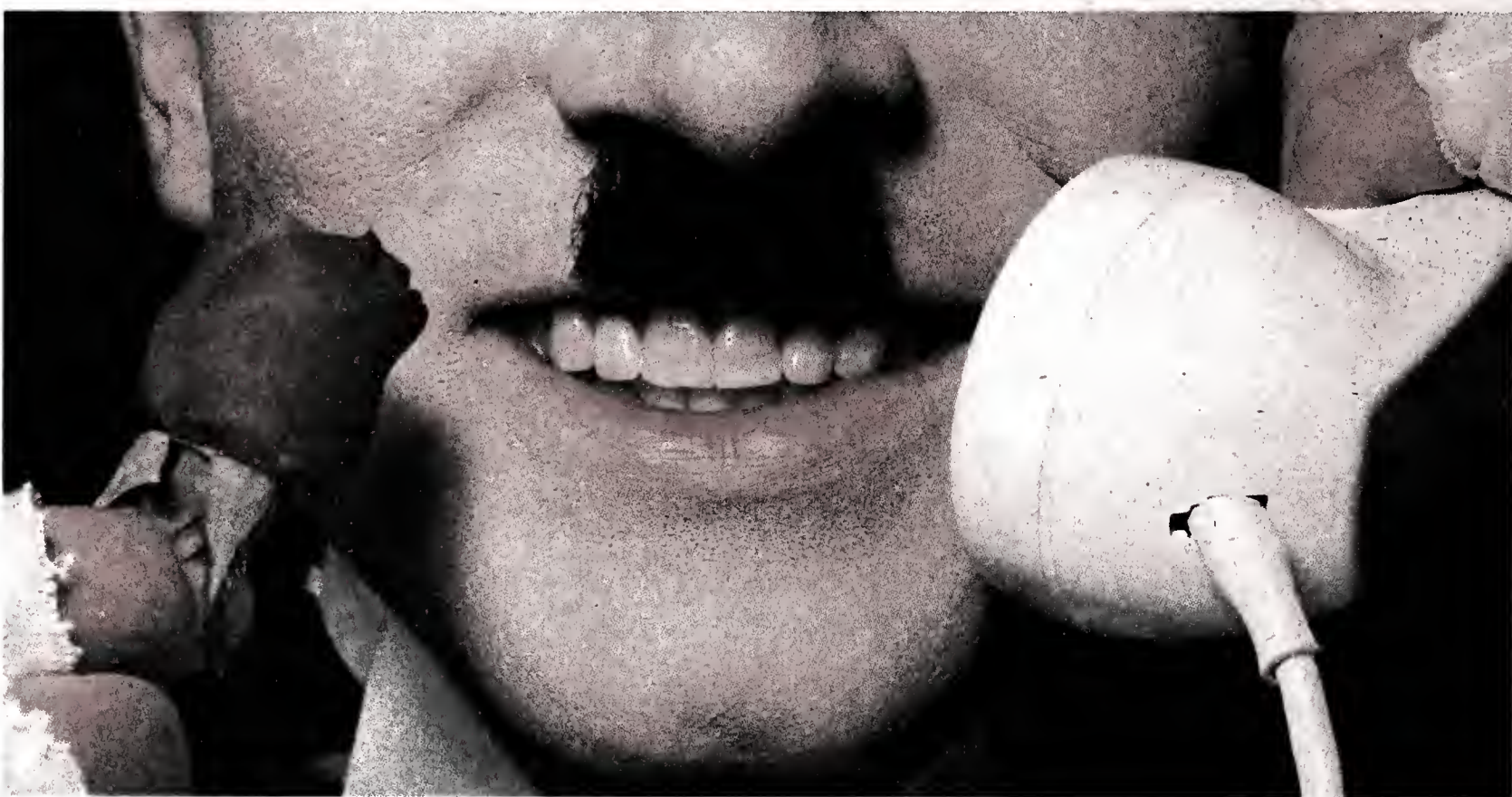
Paradyne Corp. has announced a network controller that can manage one to 10 lines while monitoring line, terminal and modem problems at up to 512 locations.

Analysis 550 is said to track line impairments and expand conventional parameter reporting, analyzing data from each network location on a continuous, noninterfering basis.

According to the vendor, the operator commands the network from a terminal controller and keyboard with simple and descriptive displays and commands. Polling and status reporting is over a noninterfering diagnostic channel and doesn't affect primary data transmission.

Scheduled for July shipments, Analysis 550 costs \$12,500.

Paradyne, 8550 Ulmerton Road, Largo, Fla. 33540.



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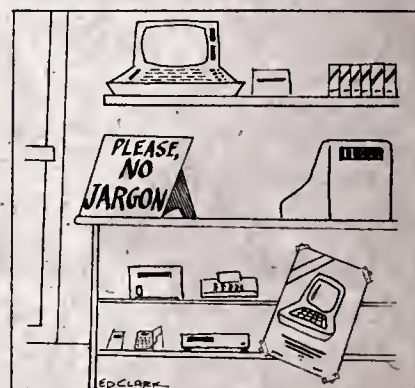
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AT&T from page 63

\$17.25 per month. Around-the-Clock Service costs \$21.45 per month for the same typical system.

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AT&T Information Systems is located at 100 Southgate Pkwy., Morristown, N.J. 07960.



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SYSTEMS & PERIPHERALS

Apollo Computer expands its Domain series Adds 32-bit workstation, network file servers, software enhancements

By James Connolly
CW Staff

CHELMSFORD, Mass.— Apollo Computer, Inc. last week added to its Domain family of graphics systems a mid-range, 32-bit color workstation, network file servers and software enhancements.

The DN550 color graphics workstation is said to be compatible with other Domain system nodes, offering the floating-point processing power of the DN320 and graphics capabilities comparable to the DN460 and DN660.

It was designed to run more than 300 scientific and engineering application packages offered for Domain systems. The company said applications include circuit layouts, mapping and piping.

The DN550 and its OEM version, the RM550, are based on the Motorola, Inc. 68010 microprocessor. Features include

3M bytes of main memory, a bit-sliced graphics processor, four planes of color and up to 2M bytes of double-buffered display memory.

The workstation was designed to provide flicker-free color graphics, multiwindow multitasking (allowing up to 24 concurrent processes with 16M bytes of virtual address space per process). It features an integral interface to Apollo's 12M bit/sec Domain local-area network. The workstation's 19-in. color display is said to offer 1,024- by 800-pixel resolution, tilt-and-swivel design, a nonglare filter and the ability to display 256 colors from a palette of 16.7 million.

According to the company, the DN550 electronics housing was designed to fit under a worktable. The modules in the housing include a processor module, an optional 5¼-in., 50M-byte Winchester disk and

an optional Intel Corp. Multibus module.

The RM550 is available for rack-mount configuration.

The workstation uses Apollo's Aegis operating system and AUX, the firm's implementation of Bell Laboratories Unix System III with University of California at Berkeley Unix extensions.

While announcing the DN550, Apollo also introduced Domain software enhancements that include Revision SR8 of AUX, designed to improve the performance and functionality of the graphics firmware and to provide laser printer support, Digital Equipment Corp. VT100 terminal emulation and X.25 certification for several U.S. and international networks.

The company also announced its Graphics Metafile Resource, a graphics software package that combines graphics capabilities. See **APOLLO** page 78

■ Honeywell, Inc. announces enhancements to its Series 7900 financial systems/70

INSIDE

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Printers/Plotters/74

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Board-Level Devices/78

Auxiliary Equipment/78

Skok 32-bit workstation boasts 'electronic pencil'

CAMBRIDGE, Mass. — Skok Systems, Inc. has introduced a 32-bit computer-aided design and drafting workstation featuring the capability to let architects and engineers work with electronic pencils rather than keyboards or joysticks.

The Artech Designstation reportedly includes a Hewlett-Packard Co. 9920 processor with 2M bytes of random-access memory and can be connected in a network. It displays two-dimensional and three-dimensional images on a 19-in. color screen and lets users enter commands via a graphics tablet. That tablet contains more than 300 directly accessible instructions, according to Skok.

Features are said to include production of drawings from two to 20 times faster than can be done manually, simple placement of fixtures such as walls and furniture, integration of design components such as structural and plumbing layouts, electronic layering of sheets in color with each layer shown separately, zoom magnification and panning for broader views.

The vendor said that each workstation in an Artech network, connected through Skok's Shared Resource Manager controller, operates independently so that performance levels are maintained, even as the number of workstations increases.

Artech reportedly can be upgraded with a graphics processor, See **SKOK** page 78

STC offers tape subsystem, four-channel switch option

LOUISVILLE, Colo. — Stressing that it is continuing development of an 18-track, IBM-compatible cartridge tape subsystem, Storage Technology Corp. (STC) recently announced a four-channel switch and a nine-track, standard reel tape subsystem.

STC officials said the nine-track, 125 in./sec reel-to-reel 4650 Tape Subsystem was designed for users who find a conversion to a new tape medium difficult to justify. The company said it will continue work on an 18-track cartridge tape subsystem with automated cartridge handling designed to be compatible with the IBM 3480 cartridge-based product announced in March.

The 4650 is part of the STC 4600 family, joining the previously announced 200 in./sec 4670. The two are self-contained subsystems featuring an integrated controller for space and power savings, according to STC.

The 4650, scheduled for shipment this month, is reportedly equipped with an integrated 64K-byte data buffer that utilizes 3M byte/sec computer channels. When equipped with an optional tridensity feature, the 4650 can read and write at 800, 1,600 or 6,250 bit/in. from a single drive, eliminating the need for separate units, according to the company.

STC also announced a four-channel switch as an option for the See **STC** page 78

Vendors' directional statements: More harmful than helpful?



HARD TALK

Tom Henkel
CW Senior Editor

Vendors' directional statements, which offer users a limited insight into the types of new products they can expect in the future, appear to be on the rise. But when it comes down to planning for the future, how helpful are such statements?

IBM, for example, has issued several statements of intent in recent months. These include a promise to provide additional graphics support for its System/38 and the ability to connect IBM's popular Personal Computer to more IBM systems.

Wang Laboratories, Inc. has also issued statements of direction. A recent directional statement promises

users added capabilities for the firm's Wang Systems Networking strategy.

Clearing the mystery?

Both IBM and Wang have traditionally been closemouthed when it comes to talking about new products. The directional statements from both firms appear to have done little to clear up the mystery of the types of new products that may be announced.

Perhaps more importantly, however, directional statements from Wang and IBM have not given users many clues to help them understand what sort of changes they might have to make in order to take advantage of new products when they become available.

At Impact-DC, a users group meeting recently sponsored by the International Society of Wang Us-

ers, a Wang spokeswoman repeatedly stonewalled users' questions of how Wang planned on implementing various components of its networking strategy. Users leaving the session, which was billed as a strategic and directional statement by Wang, chuckled that the spokeswoman revealed virtually nothing about Wang's future plans.

Hint more helpful

Perhaps even the most ambiguous hint of a vendor's direction is more helpful than letting users be surprised the day a series of new products is announced. IBM still appears to be suffering from its surprise announcements of two innovative systems: the System/38 and the 8100 distributed processing system, which some industry watchers contend were never properly explained to the user community.

Instead of being a helping hand to users, directional statements could also be viewed as a backdoor admission by vendors that a market exists today for a product that they cannot deliver until some point in the future.

The implied hope is that by promising to develop a product that users want, vendors can pacify users long enough to actually build the promised product.

Planning is a key function of the DP executive. Gearing up for change is probably more important than actually implementing it. It is questionable whether vendor directional statements actually put users in a better position.

In some cases, directional statements could be harmful because they may wind up giving users false hope for a rapid solution to their problems.

SYSTEMS & PERIPHERALS

Honeywell enhances Series 7900 systems

BILLERICA, Mass. — Honeywell, Inc. has announced hardware and software enhancements for its Series 7900 platform and back office systems designed for the financial industry.

The company announced three monitors for the platform station — used by bank officers in customer service — a nine-in. color monitor, a 13-in. color monitor and a 12-in. monochrome monitor.

Honeywell also said it enhanced its Platformbanker software with a Customer Information File (CIF) Relationship Profile System designed to facilitate opening and closing of accounts.

Included in the Platformbanker Master Module, the CIF Relationship Profile System contains a series of programs that create new account profiles or modify existing customer information files, according to the vendor.

Other additions

Other additions include a forms automation module for Platformbanker and a series of printers.

A document/passbook printer is said to feature a 16-key programmable pad that allows sharing by multiple users. It prints a variety of documents and cuts forms at 125 char./sec or 150 char./sec.

Other printers include 80-col. and 132-col. dot matrix printers producing 100 char./sec and a bidirectional 96-char. letter-quality wheel printer, the vendor said.

Prices for enhancements

Prices for the enhanced Series 7900 platform station, scheduled for shipment delivery during the third quarter of 1984, range from \$3,800 to \$11,500.

Prices will vary according to configuration. Individually priced products include the document/passbook printer, which costs \$4,850.

Honeywell is located at 300 Concord Road, Billerica, Mass. 01821.

August Special Report to target minicomputers

Is the minicomputer an endangered species, assaulted by high-powered, multiuser microcomputers on the low end and by robust 32-bit superminicomputers at the high end?

Computerworld's August Special Report will take a look at how minicomputers and small business systems are used in large corporations and small businesses, how they are used as turnkey systems and the integration of these systems into vertical markets.

In addition, there will be stories about minicomputers and small business systems in distributed processing setups for general data processing and about dedicated minicomputers used for transaction processing.

Contributions to the Special Report should take one of two forms: a tutorial article, discussing an issue or trend; or an application story, outlining a particular user firm's experience with a minicomputer system.

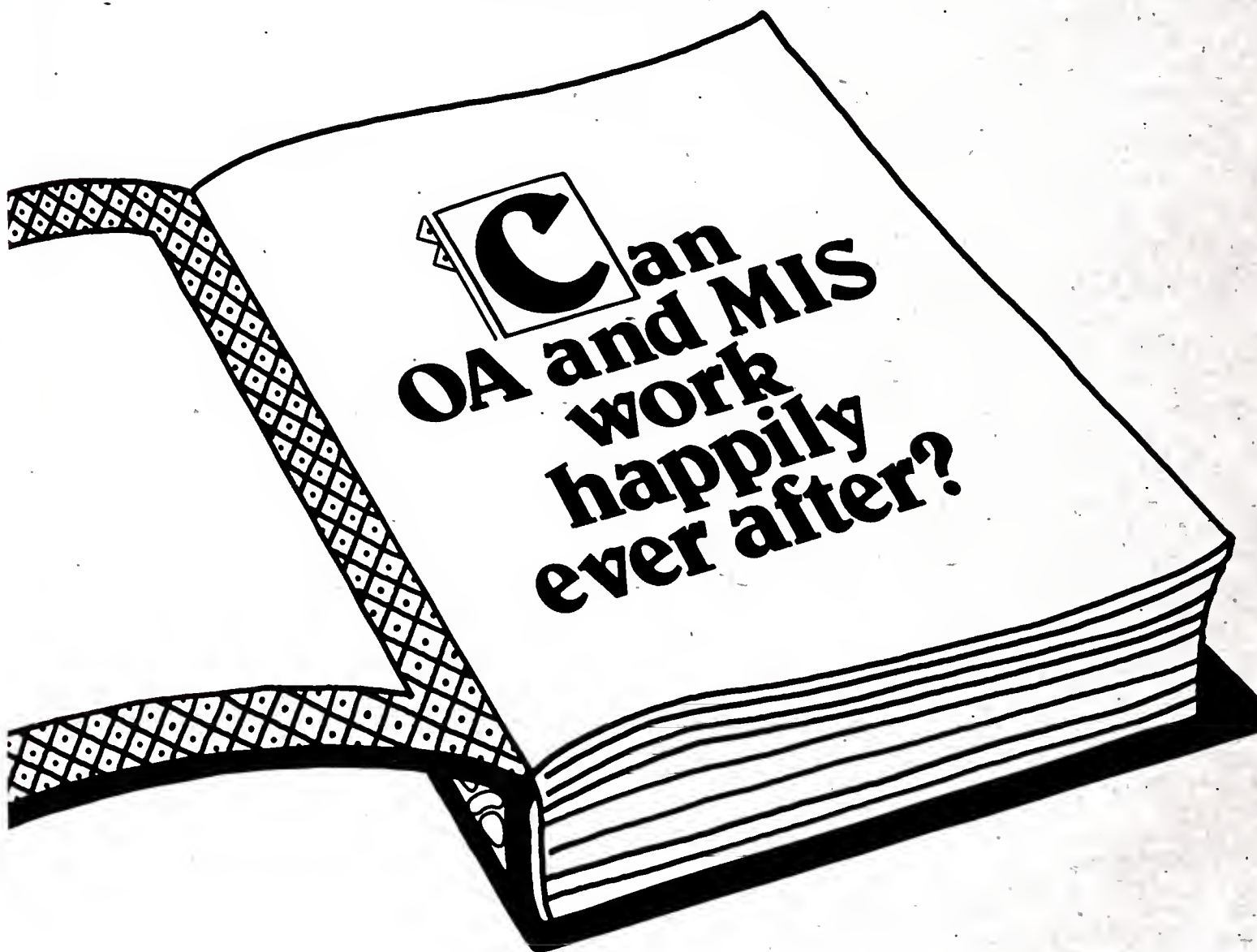
Articles for the Special Report must be typed, double-spaced and range in length from four to six pages.

Artwork, such as charts, graphs and photographs, is welcome.

Authors should include a brief biography and a telephone number at which they can be reached.

The deadline for submissions to the Special Report is June 27.

If you have a story to tell or any questions to ask, send them to Donovan White, Special Reports Editor, *Computerworld*, 375 Cochituate Road, Box 880, Framingham, Mass. 01701.



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TURNKEY SYSTEMS

VERBEX
Model 3015

Verbex has announced the Model 3015 voice data entry system, said to permit up to four users to share sequentially one speaker-dependent, continuous speech processor.

Able to connect via RS-232C interfaces, the Model 3015 has a vocabulary of 360 words that can be divided among four users. Users enter data sequentially, and the system automatically recognizes the current user by processing the input through a speech input multiplexer, which transfers the input to the single speech processor in milliseconds, the vendor said.

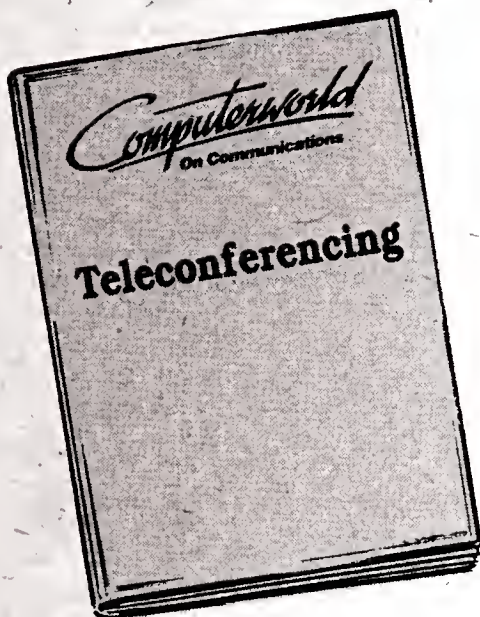
The system can be connected to various mini-, micro- or mainframe computers and terminals, including the Hewlett-Packard Co. 1000 and 3000 series systems, the Digital Equipment Corp. PDP-11 and VAX-11 series and the IBM 3270 interactive terminals (with protocol converter).

The Model 3015 can be used for voice input to inspection workstations, warehouse receiving systems, material management systems, financial order entry applications, as well as an interface to computer-aided design and manufacturing systems.

Continued on page 72

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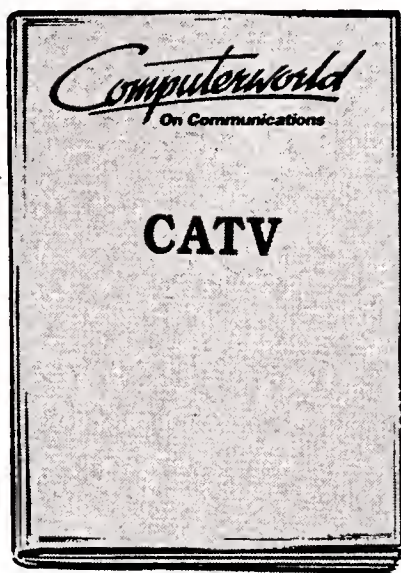
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August

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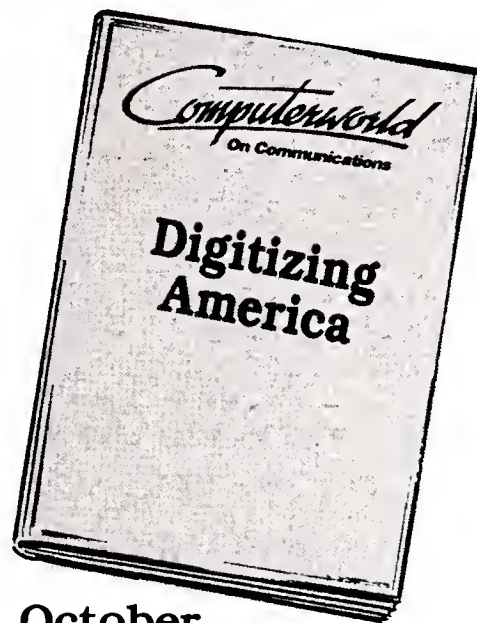
Closes June 29



September

We'll study how business communication carriers and users can put voice, data, and other traffic on the thousands of miles of existing CATV cables. CATV loops are a viable alternative to those offered by the Bell Operating Companies.

Closes August 3



October

Communications networks are switching to all-digital. AT&T and MCI are using fiber-optic-based transmissions and satellite services. We'll explore how these changes affect users, and what the opportunities are for vendors.

Closes August 31

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SYSTEMS & PERIPHERALS

Continued from page 70

Each model includes a four-channel data entry workstation and a speech processing unit, according to the vendor.

The Model 3015 voice data entry system is priced at \$24,440, the vendor said.

Verbex, Two Oak Park, Bedford, Mass. 01730.

ACCTEX INFORMATION SYSTEMS, INC.

Microfiche image retrieval system

Acctex Information Systems, Inc. has announced a system that provides automated computer output microfiche retrieval within integrated office automation functions.

The system uses an IBM Personal Computer XT, coupled with Acctex's

retrieval software called Filed/Indexed Documents (Find), and is said to store and retrieve microfiche images using Information Design, Inc.'s automated microfiche cassette retrieval system.

The Find software is said to eliminate the need to retrieve and refile microfiche manually for many applications.

The system is modular to allow growth to larger capacity systems, such as the IBM Series/1 or Prime Computer, Inc. minicomputers, according to the vendor.

The microfiche retrieval system is priced at approximately \$27,500, according to Acctex Information Systems.

Acctex Information Systems, Suite 2025, 601 Montgomery St., San Francisco, Calif. 94111.

DATA STORAGE

FIRST COMPUTER CORP.
Aquarius

First Computer Corp. has announced Aquarius, a large-capacity storage subsystem for Digital Equipment Corp. VAX-11 and PDP-11 computer systems.

Aquarius uses the Storage Technology Corp. 2921 group-coded recording tape drive, which is a 6,250 bit/in. tape subsystem including a 10½-in. fixed disk drive with 474M bytes of storage capacity, the vendor said.

The price for Aquarius ranges from \$30,875 to \$53,105.

First Computer, 645 Blackhawk Drive, Westmont, Ill. 60559.

TERMINALS

TERM-TRONICS, INC.
Mega II

Term-Tronics, Inc. has announced Mega II, a terminal said to emulate three types of computer systems simultaneously.

The Mega II can emulate IBM or Digital Equipment Corp. asynchronous and synchronous terminals, respectively, according to the vendor.

Mega II is coaxial plug-compatible with IBM 3278 Models 2-5 and the IBM 3178 and plugs directly into IBM's 3274 controller.

The terminal also includes a local screen copy printer and an RS-232C port for a CP/M-based personal computer. Standard features include English language menu set-up, component level diagnostics and 14-in. green or amber phosphor screen.

The price for the product is \$2,495, the vendor said.

Term-Tronics, 7408 Trade St., San Diego, Calif. 92121.

DATA GENERAL CORP.
Dasher D470C

Data General Corp. has announced the Dasher D470C, a color alphanumeric display terminal for decision support, word processing and color graphics operations, compatible with earlier Dasher models.

The company also announced price increases for the Dasher D410 and D460 display terminals.

The Dasher D470C color features are said to be programmable so that the host computer can execute color features on command or the user can manipulate them from the keyboard. Users can select from 16 colors for foreground and background, the vendor said.

Up to 2,016 additional characters can be defined on the D470C, and a set of commands is provided for drawing line, bar and pie charts, according to the company.

DG's workstations, including the Dasher D470C, support DG proprietary 7-and 8-bit modes, which preserve software compatibility with the company's earlier products and systems. Also supported are Ansi-compliant X3.4, X3.41 and X3.64 modes, which let users integrate the Dasher D470C with other Ansi-based systems, according to the vendor.

The Dasher D470C is priced at \$2,995, the vendor said. Prices for the D210, D410 and D460 were raised \$150, \$150 and \$200, to a total of \$1,145, \$1,785 and \$1,985, respectively.

DG, 4400 Computer Drive, Westboro, Mass. 01580.

SEILLAC CORP.
Seillac 7

Seillac Corp. has announced the three-dimensional color display, Seillac 7, said to offer resolution of 1,400 by 1,024 pixels, jitterless 60Hz noninterlaced refresh, 120 MHz video bandwidth, choice of 19-in. or 24-in. CRT and antialiasing line-smoothing hardware to eliminate staircasing and to generate lines comparable to a random-stroke display.

Seillac 7 displays up to 16.7 million colors and performs three-dimensional graphics functions, including translation, rotation, scaling, clipping, fill, perspective and interac-

Continued on page 74

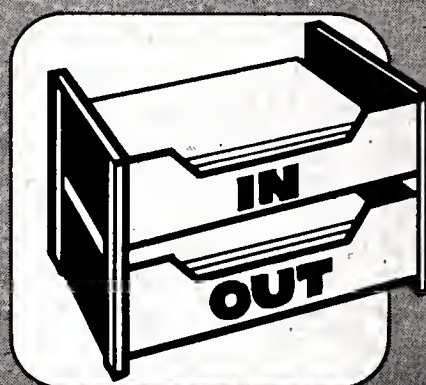
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To arrange to have an IBM representative contact you, call toll free 1 800 IBM-2468, Ext. 90.



SYSTEMS & PERIPHERALS

Continued from page 72

tive functions such as positioning, dragging and picking, according to a spokesman for the vendor. The product can be fitted with a variety of input devices, including a light pen, tablet, joystick, dials and function keys.

Applications categories include computer-aided design (CAD), computer-aided manufacturing, architectural and engineering CAD, biomedical graphics, defense automation, image processing, mapping and cartography, process control, scientific research and animation.

The price of the display is \$28,000, the vendor said.

Seillac, 1000 E. Dominguez St., Carson, Calif. 90746.

FUJITSU SYSTEMS OF AMERICA ACT 2000

Fujitsu Systems of America has announced an automated teller machine (ATM) featuring voice guidance and designed to assist first-time bank ATM users.

The ACT 2000 is said to include a horizontal keyboard for customer privacy and a shield that controls the viewing angle of the CRT screen. It reportedly features eight function selection keys with four on each side of the screen to allow more transaction options to be displayed simultaneously.

According to Fujitsu, the voice guidance feature uses a human voice rather than computer simulation and operates on a 5- to 10-sec delay allowing for consumer override when the user doesn't need guidance.

It is scheduled for availability during the fourth quarter of 1984.

Prices range from \$16,000 to \$22,000, with the high-end configuration including the \$1,000 voice guidance feature and several security options.

Fujitsu Systems, 9841 Airport Blvd., Los Angeles, Calif., 90045.

TELEVIDEO SYSTEMS, INC. 925E

Televideo Systems, Inc. has introduced its 925E terminal, which reportedly emulates its 925 terminal while offering ergonomic design.

The 925E reportedly has applications in engineering, word processing, data entry, computer programming and process control. It meets international DIN standards for efficiency and ease of use and features a tilt-and-swivel screen, a buffered printer port to allow use of less expensive printers and 16 function keys that can be shifted to 32.

The 925E terminal is available for \$795.

Televideo Systems, 1170 Morse Ave., Sunnyvale, Calif. 94086.

MCDONNELL DOUGLAS AUTOMATION CO. D-90C

McDonnell Douglas Automation Co. (McAuto) has announced a color raster workstation for use with its Unigraphic system for computer-aided design, manufacturing and engineering.

The D-90C features a high-contrast graphics display terminal with 19-in. screen and 12-in. screen message monitor, alphanumeric keyboard for entering text and a full-function keyboard, according to the

vendor spokesman.

The monitor is said to provide 792-by 1,024-pixel viewable display points and 60Hz noninterlaced refresh rate for a flicker-free image. The D-90C will display up to 15 user-defined colors from a palette of 4,096 hues, the vendor said.

The D-90C is said to be compatible with the McAuto D-100S workstation and is said to run Unigraphics software, including Unigraphics II, designed for 32-bit processors. The D-90C can emulate the Digital Equipment Corp. VT100 and the Tektronix, Inc. 4014 terminals and supports Tektronix Plot 10 software, the vendor said.

The D-90C is priced at \$27,900, the vendor said.

McAuto, P.O. Box 516, St. Louis, Mo. 63166.

PRINTERS/PLOTTERS/ PERIPHERALS

SPUR PRODUCTS CORP. Universal Subsystem Adapter

Spur Products Corp. has announced the Universal Subsystem Adapter, which is said to enable non-IBM computer systems to drive an IBM 2311 high-speed impact printer, a Xerox Corp. laser printer or a Kodak Corp. Komstar microimage processor.

The unit is capable of shaped-character printing at 2,000 line/min and dot-matrix printing at up to 18,000 line/min. The unit can also perform microform printing, the vendor said.

The Universal Subsystem Adapter

is currently available for users of Digital Equipment Corp. PDP-11 series minicomputers.

In addition to the 2,000 line/min print speed and 48-char. print-chain features, the IBM 3211 offers operating features not available with the slower printers normally used on DEC minicomputers, the vendor said.

Microcode supplied with the adapter will support any two print trains of the customer's choice without software changes. The IBM 3211, the Xerox 8700 or 9700 and the Komstar microimage processor all appear to the non-IBM system as its own device.

The Universal Subsystem Adapter costs \$6,000 and will be available to DEC users in July.

Spur Products, 13469 Beach Ave., Marina Del Rey, Calif. 90292.

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I won't go into great technical detail
about Friday! because there isn't any. I just
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screen, push a few buttons and—Zap!—I get the
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"electronic files."

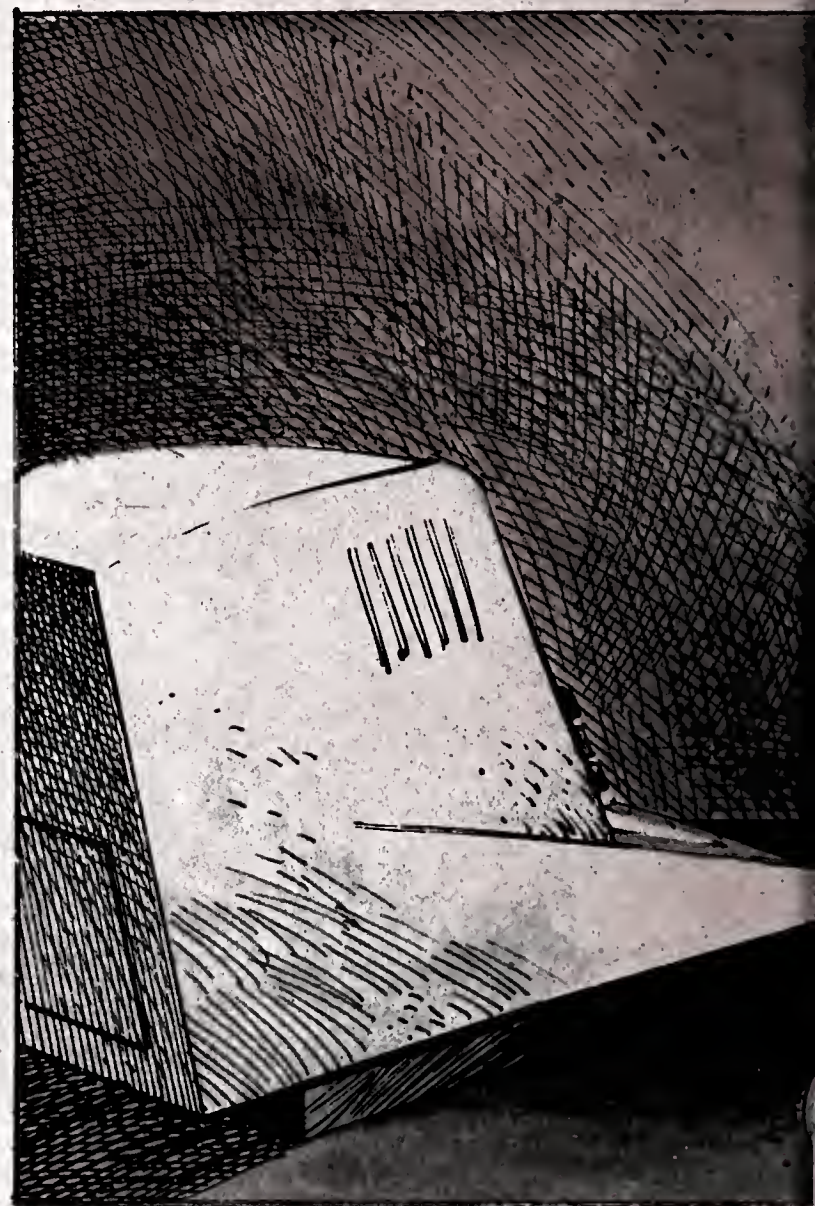
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Sales by product, salesman and territory
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he said it was the best he'd seen since the
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Very simply—and with blazing speed—
Friday! handles just about everything that
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It's terrific for inventory and invoices
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1-2-3¹ and WordStar² files.

And wait until you see the way it han-
dles mailing lists and labels—it's worth the
\$295 (suggested retail) price for that alone!

SYSTEMS & PERIPHERALS

**IBM
IBM 4715 Model 1**

IBM has announced a printer designed for use with continuous and cut forms with the IBM 4700 finance communication system.

The IBM 4715 Model 1 continuous forms printer is said to be a tabletop, serial, bidirectional, matrix impact printer.

The printer operates at five print speeds ranging from 90 to 216 char./sec, according to a spokesman for IBM.

As part of the IBM 4700 finance communication system, the IBM 4715 Model 1 was reportedly designed to support teller, administrative and self-service applications for financial institutions.

It attaches to the IBM 4701 con-

troller via a loop operating at 1,200, 2,400 or 4,800 bit/sec and prints on continuous forms paper ranging from 114.3mm to 254mm wide or cut forms from 98.04mm to 254mm wide, the IBM spokesman said.

Designed to support regular and quality print, it prints at 10 char./in., 180 char./sec regular; 10 char./in., 90 char./sec quality; 12 char./in., 216 char./sec regular; 12 char./in., 108 char./sec quality; and 17 char./in., 154 char./sec regular, according to IBM.

Scheduled for availability in December, it costs \$3,600, the spokesman said.

The IBM 4715 Model 1 printer can also be leased for \$300 per month, according to IBM.

IBM, Information Systems Group, 900 King St., Rye Brook, N.Y. 10573.

GRAPHICS SYSTEMS**MANAGEMENT GRAPHICS, INC.
QM-1 Quickchart Concentrator**

Management Graphics, Inc. has introduced the QM-1 Quickchart Concentrator, an automated system that allows dial-in users at ordinary computer terminals or word processors to make 35mm slides in predesigned formats.

The QM-1 Concentrator uses the company's Quickchart concept, a graphics tool said to allow fill-in-the-blank slides to be made from predesigned slide formats in one to five minutes.

Up to six Quickchart users can communicate at once with the QM-1 Concentrator via telephone modems.

Slide formats provided with the product include title, text, bars, pies, lines, maps and special effects, the vendor said.

QM-1 Concentrators is priced at \$45,000, the vendor said.

Management Graphics, 1401 E. 79th St., Minneapolis, Minn. 55420.

**PARAGON TECHNOLOGY CORP.
Series 100A**

Paragon Technology Corp. has announced a central processor to increase the speed of its stand-alone portable turnkey computer-aided design, computer-aided manufacturing system, called the Series 100A.

Series 100A is targeted to users who require a powerful, low-cost starter design automation system, the vendor said. The CPU has been upgraded to a Digital Equipment Corp. LSI 11/23+ running at 20 MHz, with a 64K-byte memory and three serial ports. Dual 8-in. flexible disk drive units are also included.

The upgraded units can design a 20- by 20-in. board and feature 150 equivalent integrated circuits that use up to seven colors to design up to 14 layers of artwork. Software includes schematics and design rule checking for angles, gaps and connectivity checks. The Series 100A can be upgraded to Paragon's Series 200A or Model 301 graphics workstation, the vendor said.

The price for the upgraded units is \$29,950, the vendor said.

Paragon Technology, 2199 Norse Drive, Pleasant Hill, Calif. 94523.

**TERAK CORP.
8510/10; 8600/10**

Terak Corp. has announced enhancements to its computer-aided design and drafting systems, including an integral 10M-byte hard disk drive, tilt-and-swivel 15-in. monochrome monitor, 12- by 17-in. computer-aided design and drafting digitizing tablet and low-profile adjustable keyboard.

The systems, called the 8510/10 Monochrome CAD/D system and 8600/10 Color CAD/D system, incorporate both a 1.2M-byte floppy disk drive and a 10M-byte, 5¼-in. Winchester-type hard disk, according to a vendor spokesman.

Other enhancements reportedly include increasing the viewable area of the 8510 monitor by 156%.

Prices for the 8510 and 8600 start at \$12,500, including software.

Terak, 14151 N. 76th St., Scottsdale, Ariz. 85260.

**DIGITAL ENGINEERING, INC.
4210; 4205 graphics terminals**

Digital Engineering, Inc. has announced two graphics terminals based on CMOS technology.

The terminals are the 4210 Monochrome Hiscan graphics terminal and the 4205 Color Hiscan graphics terminal.

The 4210 terminal is based on a Digital Equipment Corp. VR201 monitor and a DEC VT200 keyboard. The 4205 terminal is based on a DEC VR241 color monitor and a DEC VT200 keyboard.

The 4210 is scheduled for July availability at \$2,195. The 4205 is scheduled for September deliveries at a price of \$2,995, according to the vendor.

Digital Engineering, 630 Bercut Drive, Sacramento, Calif. 95814.

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system to choose when you've got to be right.

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to your needs. **Data Management**—the System 75 controller processes and converts digital signals providing simultaneous voice-data transmissions at selected speeds up to 64 Kbps.

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Office Management—includes an

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As you can see, System 75 is not only mid-sized, its prominent features give it a

striking resemblance to its big brother. Which is not surprising considering it was developed by systems designers from AT&T Bell Laboratories and manufactured with the same quality and reliability you've come to expect from AT&T.

System 75 incorporates Information Systems Architecture, the design principle that ties our products together and provides for future expansion and system integration. What's more, this mid-sized system is backed by the largest, most experienced nationwide staff of sales and service specialists in the industry. For more information on System 75, call

1-800-247-1212, Ext. 326.

If you're looking for a mid-sized system with all the features of a large one, System 75 delivers big.

WHEN YOU'VE GOT TO BE RIGHT.



AT&T

Information Systems

SYSTEMS & PERIPHERALS

STC from page 69

4650 and 4670.

Prices for the 4650 are \$45,000 for a controller and one drive and \$19,050 for an additional drive. The triden-sity feature is priced at \$3,100 per controller. Three-year lease prices are \$1,082 plus \$379/mo for prime-time maintenance for the 4650 with a controller and one drive and \$377/mo plus \$235 maintenance for each additional drive. The buffer/tape accelerator costs \$12,000 or \$310/mo plus \$36/mo maintenance under lease.

The four-channel switch for the 4650 and 4670 costs \$10,920 when purchased or \$246/mo plus \$18/mo maintenance under lease.

Storage Technology is at 2270 S. 88th St., Louisville, Colo. 80028.

BOARD-LEVEL DEVICES**ILC DATA DEVICE CORP.**
Bus-66105

ILC Data Device Corp. (DDC) has announced a dual-port memory hybrid, Bus-66105 designed as an interface between an MIL-STD-1553 (Aircraft Internal Time Division Command/Response Multiplex Data Bus, a military standard used for integration of weapons systems) dual redundant Remote Terminal Unit (RTU) and a subsystem parallel tri-state data highway.

Because of its Intel Corp. 8086-compatible CPU face and its standard random-access memory, the Bus-66105 may also be used in other applications, the vendor said.

The Bus-66105 has dual-address registers. It is Multi-bus-compatible on the CPU side and is compatible with the vendor's hybrid RTU set on the 1553 data bus side.

The Bus-66105 costs \$427. *ILC Data Device, 105 Wilbur Place, Bohemia, N.Y. 11716.*

AUXILIARY EQUIPMENT**HENDRIX TECHNOLOGIES, INC.**
The Converter

Hendrix Technologies, Inc. has announced a media-conversion device and a portable version of the device.

The Converter is a media-conversion device said to feature microprocessor con-

trolled reading of disks. The unit then can transfer the information to host devices. Based on Digital Equipment Corp. equipment, it features two disk drives that can read and transfer from 5¼-in. and 8-in. diskettes.

It reportedly is designed for use with a variety of office automation and in-plant printing equipment.

An option is Compatibility Plus, a board used for string translation and conversion.

The Converter is connected to hosts through an asynchronous teletypewriter terminal-style protocol with an RS-232 interface. It costs \$11,995, and the Compatibil-

ity Plus costs \$1,500.

The portable conversion device is called Konnect 2.

It is said to be micro-processor-based and designed for applications such as bringing work from home personal computers to the office, exchanging information among word processing systems and eliminating the need for personal computers to have their own printers. It reportedly attaches to a host system through an RS-232 or parallel printer or communications port.

It costs \$2,450.

Hendrix Technologies, 670 N. Commercial St., Manchester, N.H. 03101.

SKOK from page 69

which allows the system to manipulate graphics images dynamically.

The Artech Designstation

costs \$27,500, while a fully configured system with a dual disk drive, a D-size plotter and Skok's Arplan two-dimensional design and drafting software costs \$59,500.

Skok's three-dimensional software program, Arview, costs an additional \$7,500. Skok Systems is located at 222 Third St., Cambridge, Mass. 02142.

Redac sets pact

BOSTON — Racal-Redac, Inc. has announced a joint marketing agreement with Apollo Computer, Inc. involving Racal-Redac's Computer Integrated Electronic Engineering (CIEE) software and Apollo's 32-bit graphics workstations and Domain networking environment.

The agreement calls for Racal-Redac to buy Domain workstations and for existing Apollo users to be able to buy CIEE.

CIEE is designed to integrate electronic engineering applications from engineering through design, production and testing.

Apollo officials estimated the value of Domain sales under the agreement at \$10 million.

APOLLO from page 69

ties with high graphics throughput, while pointing out nongraphics information.

The MSD-500M disk drive and the MSD-1000M dual unit can be configured as the DFS-500M and the DFS-1000M file servers, which were designed to provide a data base for applications such as software development, image processing and mechanical and electrical computer-aided design, according to the vendor.

The DFS products feature 9-in. Winchester disk drives, a Motorola 68010 microprocessor, 1M byte of main memory and a four-slot Multibus peripheral adapter that lets users connect to a variety of peripherals in a Domain network and acts as a gateway for communications standards, such as X.25 and Ethernet.

The single unit offers 500M bytes of storage, and the dual unit has 1G byte of storage.

The DN550, with 1M byte of main memory, 1M byte of display memory, display, keyboard and enclosure, is priced at \$31,500. The RM550 costs \$30,000 without the enclosure, the vendor said.

The MSD-500M, with cabinet, one disk and a controller, costs \$25,000. The MSD-1000M, with cabinet, two disks and a controller, costs \$45,500. The DFS-500M, including a cabinet, disk and peripheral server/processor, costs \$36,000. The DFS-1000M, with cabinet, two disks and a peripheral server/processor, costs \$56,500.

Apollo is located at 330 Billerica Road, Chelmsford, Mass. 01824.

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MICROCOMPUTERS

Micro WP challenging dedicated systems

By Eric Bender
CW Staff

Personal computers running new word processing packages perform as well as or better than dedicated word processors, and the software "doesn't take two days to learn," according to Deborah Fain, executive vice-president of marketing at Atlanta's Samna Corp. Working on the more powerful hardware available in high-end microcomputers, the new packages "have surpassed the dedicated word processor," she claimed.

Not surprisingly, suppliers of specialized word processors disagree. "I have a problem with that kind of statement," said Ri Regina, marketing manager for office systems products marketing at Wang Laboratories, Inc. in Lowell, Mass. In both speed and ease of use, state-of-the-art dedicated systems generally compare favorably to word processing on micros, she maintained. In particular, "Wang's current word processing product has been upgraded and enhanced dramatically with the introduction of WP(Plus), which we're ship-

ping the end of June."

Many micro software vendors are still searching for "software products [that] make a basic computer as easy to use and powerful as a dedicated word processor," noted Larry Smart, general manager of Peachtree Software, Inc. in Atlanta. Micro word processing products haven't reached that level yet, "but they're getting awful close," he said.

Suppliers say that among emerging enhancements in micro word processing, one main thrust is toward integrating full-function word processing with other applications, provided either in separate, single-function programs or in extensions to the word processing package.

"Independent software vendors are banding together under pressure from integrated packages," said Wilton Jones, president of Multimate International Corp. in East Hartford, Conn. "We're seeing more and more products performing their own limited integration." As one example, Jones mentioned new data base manager packages that write reports or extract files

in various data formats, simplifying tasks for word processing users.

Additionally, if a standard operating environment becomes available under Microsoft, Inc.'s MS-Windows or other system software, this will offer "tremendously important" advantages for users, Jones said.

Samna has taken another tack with its new Samna(plus) package, which combines word processing with a spreadsheet and a text retrieval capability. "Managers are really looking for a generic multifunction package with full-feature word processing, spreadsheet and file management so they can limit the number of packages they must support," Fain said.

This move toward integrating related functions goes hand in hand with development of enhanced communications and compatibility with other types of computer systems, software firms said. In one effort, Samna plans to reach compatibility with Wang and IBM word processors by year's end and to support IBM's Distribut-

See WP page 83

■ Comshare, Inc. introduced a record-keeping and reporting package for the IBM Personal Computer/80

■ Sharp Electronics Corp. added a four-color plotter to its peripherals line/80

■ Lotus Development Corp.'s 1-2-3 has been tailored to Data-point Corp.'s Vista PC/80

INSIDE

Software/82



System software for workstations

Most comments on the structure of microcomputer executive workstations have focused on elaborate applications software and ignored the equally important system software.

"System software" here means the programs necessary to make the microcomputer system operate effectively — the operating system, the utilities and the menu, window or related programs, which are either tightly integrated with the operating system or used to support it.

An operating system manages other programs and may also provide several associated utility programs that assist users in doing repetitive, general-purpose procedures. Almost all systems, for example, have a Copy program, which allows the copying of disk files between disks.

There are operating system utilities, programming utilities and utilities for specialized systems. Only a few utilities are required for a workstation design, but they should be regarded as necessary rather than merely desirable.

Such utilities include a menu program that displays the components of the system and allows the user to select among options. The term "menu" is being used as a generic descriptor of any software designed to allow the user to access other elements of the workstation with a minimum of keystrokes or without the use of a keyboard at all. This includes

See SYSTEM page 84

Madron is manager of computer services at North Texas State University, Denton, Texas.

Detour led Micro D chief to new career

By Paul Korzeniowski
CW Staff

SANTA ANA, Calif. — While on the road to a career in fashion design, Lorraine Mecca was detoured by a word processor and was placed on a path that led to the presidency of Micro D, Inc., one of the country's largest microcomputer distributors.

"My husband [Geza Csige, chairman of Micro D] gave me a word processor to help as I planned fashion shows," Mecca said in an interview conducted at last month's Comdex/Spring '84. "At that time, I didn't know what a word processor was, but I was impressed with how much it improved my work."

That introduction took place in 1978, during the microcomputer frontier days. Fusing knowledge of retailing, distribution and computer technology gained through work or school, Mecca and her husband founded Micro D.

"We saw there was an opportunity in the distribution area, so we took a chance and founded the company," Mecca said.



Mecca

"We started with what we thought were reasonable projections, but we blew them away a long time ago. This business turned out to be much larger than we ever expected."

Running a large company presented challenges to Mecca, challenges that in her younger years she may not have met. "The most significant thing that I have gained is confidence to be self-sufficient," Mecca said. "I met with our representatives in Europe and caught the red-eye this morning. There was a time in my life when I didn't have the confidence to work this way. My family was surprised when I went to college; it didn't think

that was the right thing for me to do. I was supposed to get married and have children."

Just as Mecca has met her challenges as president, the company has met challenges in the rapidly evolving distribution arena. Mecca credits the company's success to its investment in technology. "We were auto-

See MECCA page 84

Quadram unveils local-area net series

NORCROSS, Ga. — Quadram Corp. has introduced Quadnet, a line of three local-area network configurations designed to connect IBM Personal Computers so users can share data, programs and expensive peripherals.

Quadnet II connects a maximum of 32 IBM Personal Computers by twisted-pair cable that serves as a bus between various stations, Quadram said. A master station reportedly polls each microcomputer to determine if it wishes to send or receive data, and the master station then transfers data at a speed of 30K bit/sec.

Quadnet VI, which uses a baseband coaxial cable, reportedly can transfer data at a speed of 2M byte/sec and a distance of one mile. It uses carrier-sense multiple ac-

cess with collision detection to ensure clear, high-speed data transfer, according to Quadram.

Quadnet IX supports 255 users, uses a token-passing protocol and transmits data at a speed of 10M byte/sec, according to Quadram.

Quadnet II master kits, which include a printed-circuit board, software and a key card to prevent unauthorized access, cost \$995; each user kit, which consists of a printed-circuit board, sells for \$395.

The Quadnet VI master kit retails for \$1,995, while its user kit is priced at \$595.

The master kit for Quadnet IX sells for \$2,295; a Quadnet IX user kit costs \$795.

Quadram is headquartered at 4355 International Blvd., Norcross, Ga. 30093.

MICROCOMPUTERS

Comshare offers Profiles/PC Sharp announces plotter

ANN ARBOR, Mich. — Comshare, Inc. has introduced Profiles/PC, a personnel record keeping and reporting software package for the IBM Personal Computer XT.

The Profiles/PC data base includes personal, salary, job, organization, benefits and other data modules.

The package reportedly produces a wide assortment of personnel records, including reports to analyze employment and termination patterns, examine salary practices and notify managers of pending and overdue actions.

The menu-driven package is recommended for organizations with up to 1,500 employees per location,

Comshare said. Comshare's communications software is said to allow Personal Computer XT users at remote sites to link a centrally located corporate personnel system on a larger computer for consolidation and analysis of employee information.

Profiles/PC works on an XT with 512K bytes of random-access memory, running under Digital Research, Inc.'s CP/M-86 operating system.

Its base price is \$5,995 plus installation and maintenance charges, Comshare said. A \$1,000 discount is offered on orders placed before June 30, the company added.

Comshare is located at 3001 S. State St., Ann Arbor, Mich. 48106.

PARAMUS, N.J. — Sharp Electronics Corp. has introduced CE-515P, a four-pen, letter-size plotter.

The plotter has black, blue, green and red pens and produces output as large as 8½ by 11 in. and as small as a postcard, Sharp said.

The product includes Circle, Paint and Axis commands. Sharp reportedly is working with a number of software companies to add the plotter's print drivers to other software packages.

Initially, the plotter will be bundled with Keychart, a presentation graphics product from Softkey Software Products, Inc., according to the company.

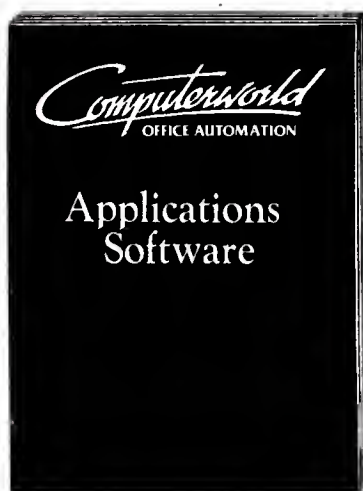
Keychart reportedly handles data from such packages as Lotus Development Corp.'s 1-2-3; Sorcim Corp.'s Supercalc; Visicorp's Visicalc; Microsoft, Inc.'s Multiplan; and Peachtree Software, Inc.'s Peachcalc.

Since the plotter is equipped with an RS-232 serial and a Centronics Data Computer Corp. parallel port, it works with a number of personal computers, including those from IBM, Apple Computer, Inc. and Tandy Corp.

CE-515P costs \$399 and will be available in the third quarter of this year.

Sharp Electronics is located at 10 Sharp Plaza, Paramus, N.J. 07652.

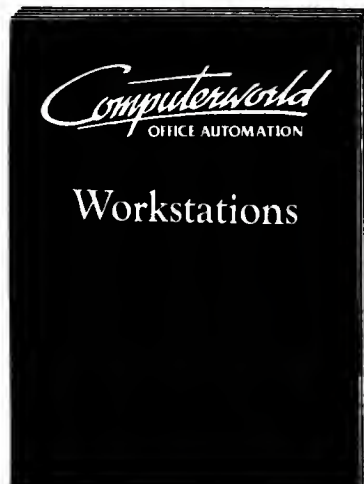
If you miss the next 3 issues of CW Office Automation, look at the issues you'll miss



August

In this issue we'll look at microcomputer and word-processing software, using product reviews and case histories. Plus, we'll show readers how to decide which products meet their current and future needs.

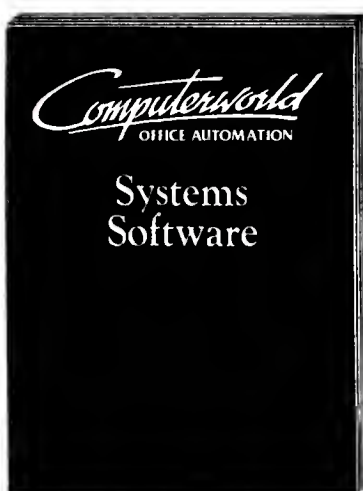
Closes: July 6



October

Readers will get the latest on integrated workstations and word processors. We'll make product comparisons, evaluate systems, and examine equipment capabilities. And we'll discuss hardware compatibility, hardware upgrades, and cost-justification ideas.

Closes: August 31



December

Coverage includes: user interfaces, natural languages, data bases, decision support systems, information centers, and artificial intelligence. Also, we'll highlight user solutions and vendor trends as we consider the current and future benefits of systems software.

Closes: October 26

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LOS ANGELES: 18008 Sky Park Circle, Suite 260, Irvine CA 92714 (714)261-1230

Select unveils writing system

KENTFIELD, Calif. — Select Information Systems has introduced an outline-based writing system for business professionals called Freestyle.

Freestyle reportedly offers a line drawing feature for charts and forms and includes an outline capability.

The program also is said to include a spelling checker, mail list merge, a glossary feature called Keyfiles and an on-screen interactive tutorial. It incorporates on-screen justification and an optional insert mode, primarily for writers, Select said.

Freestyle reportedly fully supports all IBM special character sets with on-screen text enhancement and horizontal scrolling. Its computer-assisted writing technology, Outline Zoom, allows templates to be created and used for reference guides for preparing documents, according to the vendor.

Using Freestyle, documents such as marketing plans, contracts and reports can be outlined. The directions for the writing of each document become the outline reference, Select said.

Freestyle is available for the IBM Personal Computer and compatible models under PC-DOS or Microsoft, Inc.'s MS-DOS 2.0 or 2.1 and carries a suggested retail price of \$295.

Select Information Systems is located at 919 Sir Francis Drake Blvd., Kentfield, Calif. 94904.

Lotus 1-2-3 runs on Vista PC

CAMBRIDGE, Mass. — Lotus Development Corp. has announced that its integrated software program, 1-2-3, is available for Datapoint Corp.'s Vista-PC.

"We are pleased to be associated with Datapoint," said Mitch Kapur, president of Lotus.

Vista-PC is a private-label version of Convergent Technologies, Inc. N-Gen workstation.

The integrated program sells for \$495.

Lotus is located at 161 First St., Cambridge, Mass. 02142.

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Dymek

MICROCOMPUTERS

SOFTWARE

MICROSOFT CORP.

Pascal, Fortran and C Compiler

Microsoft Corp. has released new versions of three programming languages — Fortran, Pascal and C Compiler — for the MS-DOS operating systems.

Two new math libraries were added to Pascal, one offering high-speed performance without an Intel Corp. 8087 chip, according to the company. A second optional math package reportedly offers more accurate dollars-and-cents calculations with the use of floating-point arithmetic.

The new Pascal 3.2 is said to include MS-DOS run-time support and to permit files to be accessed via the pathname directory structure. New linker extensions support overlays to allow program modules to be loaded only when needed, Microsoft said.

The latest release of Fortran includes floating-point math and MS-DOS 2.0 file and overlay linking options, as well as new support for large arrays and complex numbers, according to the vendor.

Pascal 3.2 is priced at \$300, Fortran 3.2 at \$350 and C 2.0 at \$500. Customers owning previous versions may purchase updates at reduced prices.

Microsoft, 10700 Northup Way, Bellevue, Wash. 98004.

MARTIN MARIETTA DATA SYSTEMS

Askit; Shareit

Martin Marietta Data Systems IT Software Division has announced two additions to the IT series of integrated microcomputer software.

The IT series additions include Askit, a front end to the Keepit data base manager, and Shareit, a hardware/software combination that offers a multiuser data base machine, extending the capability of Keepit, a spokesman said.

The software runs on Microsoft, Inc.'s MS-DOS operating system. The price for Askit is \$100, the vendor said. The price for Shareit is \$1,750,

including the Cogent Data Technologies, Inc. machine board, plus a charge based on number of workstations.

Martin Marietta Data Systems IT Software, P.O. Box 2392, Princeton, N.J. 08540.

SOFTEST, INC.

Lex

Softest, Inc.'s Lex word processing program is available for an IBM Personal Computer running IBM's PC-DOS operating system.

Lex features on-screen formatting, full screen editing, four-function calculator, 100,000-word spelling checker and mass-mailing capability, Softest said. The mass-mailing capability reportedly collects names, addresses and other information from

user-defined forms and can be used for on-line lookup, report preparation and generation of bulk mailings.

Softest for the IBM Personal Computer costs \$500. A demonstration diskette is available for \$60.

Softest, 555 Goffle Road, Ridgewood, N.J. 07450.

SUNBELT COMPUTER SYSTEMS, INC.

Term82m

Sunbelt Computer Systems, Inc. has announced Term82m, software that allows microcomputers running IBM's PC-DOS 2.0 or Microsoft, Inc.'s MS-DOS 2.0 operating systems to emulate Datapoint Corp.'s 8200 and 3600 series terminals.

Term82m reportedly is compatible with Datapoint's DOS Datashare,

RMS Datashare and RMS Workstation operating systems and enables users two-way transfer of Ascii text files by the microcomputer and Datapoint's minicomputers.

Terminal features supported include full-function key support, full screen support, use of 300 to 9,600 bit/sec modems and the capability to pass user-defined escape sequences to a terminal or printer.

Term82m costs \$395.

Sunbelt, Suite 120, 5525 E. 51st St., Tulsa, Okla. 74135.

INTERNATIONAL MICROCOMPUTER SOFTWARE, INC.

Bisibase

International Microcomputer Software, Inc. (Imsi) has announced Bisibase

Memorex announces Freedom of Choice in the 3270 world.

Micro data base added to Source

McLEAN, Va. — Source Telecomputing Corp. has added Microsearch, a data base with 15,000 reviews and descriptions of 6,000 microcomputer products, to the Source data base services.

Microsearch reportedly includes product information concerning compatibility questions, price and availability. The data base provides three types of services: product literature, which includes product descriptions, requirements and prices; capsule summaries of hardware and software reviews and microcomputer articles; and a directory of 3,000 manufacturers whose products are listed in the data base.

Connect-time to the Source costs \$20.75 per hour weekdays and \$7.75 per hour weekends and evenings, the company said.

Source Telecomputing is located at 1616 Anderson Road, McLean, Va. 22102.



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© 1984 Memorex Corporation. MS-DOS is a registered trademark of Microsoft Corporation.

MICROCOMPUTERS

base, a calendar and personal manager program.

The program features relationship accounting functions that reportedly track personal finances in 18 different currencies and provide an audit trail of all transactions. Bisybase's client record stores information such as name, company and type of function, while the communications history function records activities between user and clients.

Bisybase runs under Digital Research, Inc.'s CP/M and CP/M-86; Microsoft, Inc.'s MS-DOS and IBM's PC-DOS operating systems. The CP/M version requires 50K bytes of random access-memory (RAM), while the other versions need 128K-byte RAM.

Bisybase sells for \$275.

Imsi, 633 Fifth Ave., San Rafael, Calif. 94901.

DATA ACCESS CORP. Dataflex 2.0

Data Access Corp. has tailored Dataflex 2.0, a multiuser data base management system, so that it runs on Micromation, Inc.'s Mariner and M/System microcomputers.

Dataflex reportedly allows a user to open simultaneously five data base files and their indices. The product also features user-definable special-function keys, multipage context-specific Help screens, extensive data recovery facilities and allocation of shared printers, Data Access said.

Additional features are said to include menu-generation abilities, command-language compiler, programmer-definable macro facilities and interfaces to other data file formats.

Dataflex costs \$995.

Data Access, 42221 Ponce de Leon Blvd., Coral Gables, Fla. 33146.

MICROPRO INTERNATIONAL CORP. Infostar+

Micropro International Corp. has announced the enhancement of its Infostar data base management system. Infostar+ reportedly offers a data dictionary utility and the ability to restructure automatically an existing data base.

Infostar+ reportedly also offers a built-in model for transaction processing.

Responding to on-screen questions, users can identify files to be updated and the data within each that will be used, Micropro said.

At least 16 files can be accessed simultaneously, according to the vendor.

Infostar+ also is said to record current transactions automatically, update the master file and allow the user to access additional information derived from this process.

The product's new data dictionary reportedly lists all fields in the data base and their characteristics.

Micropro said the program also permits users to add, delete and change the order of fields in an existing data base without having to reenter data.

Infostar+'s capabilities are also said to include high sorting speed and the ability to customize data entry requirements down to the character level.

Infostar is available for IBM Personal Computers and compatible units operating under PC-DOS. An MS-DOS-based version is scheduled for later this summer.

The product is priced at \$595.

Micropro International, 33 San Pablo Ave., San Rafael, Calif. 94903.

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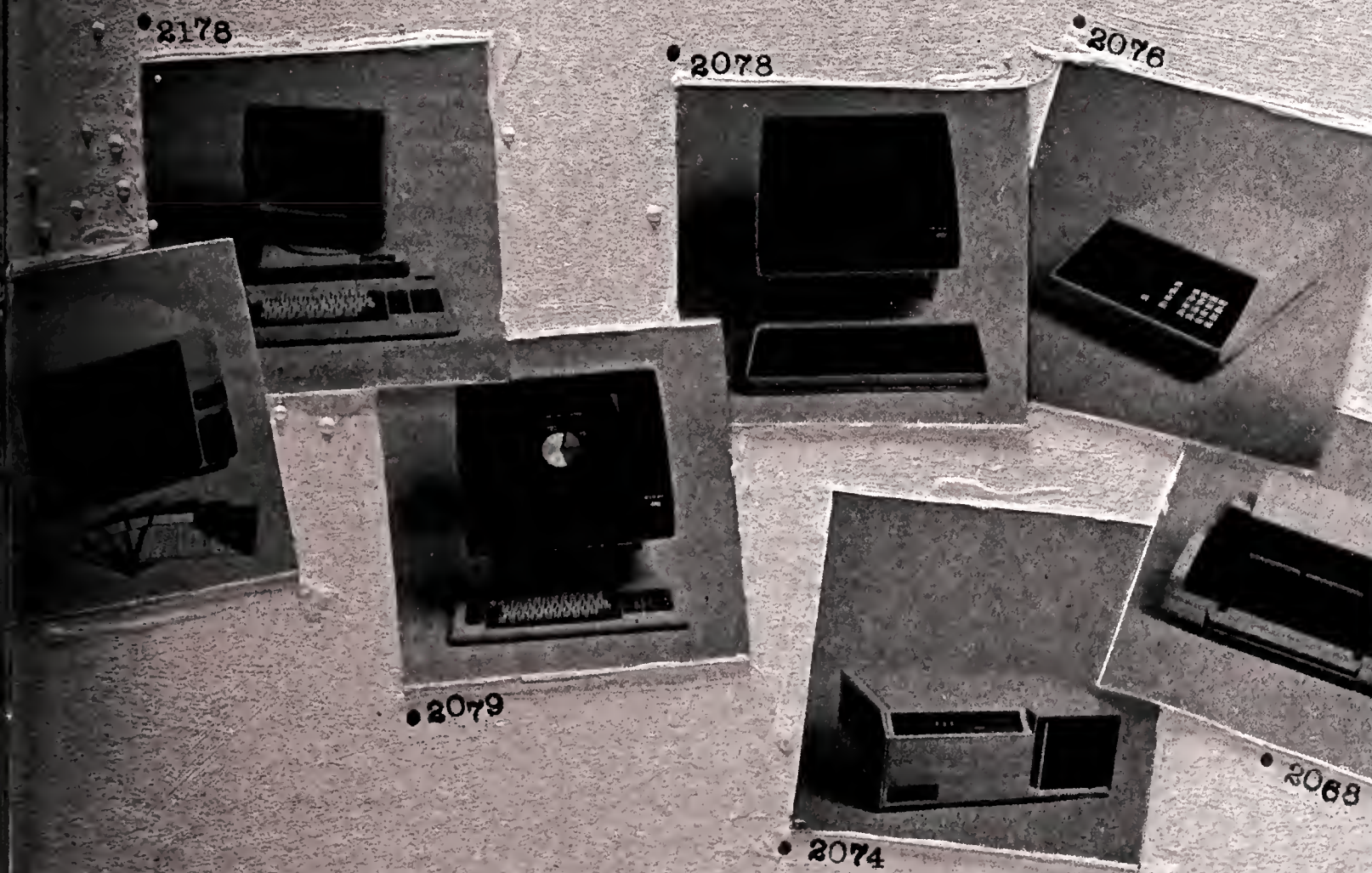
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WP from page 79

ed Office Support Software by the second quarter of 1985.

On another level, Jones pointed out that most communications programs must convert text to Ascii before transmitting, but that last month's Comdex/Spring '84 in Atlanta featured new products that can transmit without reformatting, again simplifying life for word processing users.

Meanwhile, developers keep emphasizing ease-of-use features, which are particularly important for occasional users.

Corporations are filled with two main types of users, remarked Chris Yalonis, director of microcomputer studies at Creative Strategies, Inc. in San Jose, Calif.

"There's the heavy user who can justify spending several weeks learning [Micropro International Corp.'s] Wordstar. Then there's a much larger tier of memo writers, who maybe write a memo once a day," Yalonis said.

Products such as Freestyle, offered by Select Information Systems Co. in Kentfield, Calif., are a boon to this second tier, Yalonis said: "Freestyle takes about an hour to really learn."

Vendors also expect future word processing packages to be differentiable not only by ease of use, but also by vertical markets.

Starting requirement

The starting requirement is "a basic text processing system, an engine that is very good at handling text and has a number of user interfaces," according to Smart. Multiple views of this program can be designed for users with various skills.

Developers also see a need for industry-specific versions, he said. "For example, a legal secretary has different needs from a regular secretary."

On the hardware side, word processing users will benefit from new systems and peripherals, noted Jeff Raikes, Microsoft's manager of applications marketing. The company's MS-Word, with bit-mapped graphics orientation, "is designed to take advantage of low-cost laser printers," he said.

MICROCOMPUTERS

MECCA from page 79

mated since our inception," she said. "That has allowed us to know our payables, receivables, percentage of sales, profit margin, inventory and whether that inventory was turning."

Mecca has experienced disappointments as well as successes. "Most of my disappointments were people-related," she said.

"If you put in time and effort to learn this industry, there is really no stopping what an individual can achieve," she added. "Yet we've had people who didn't see that and left or didn't take advantage of it and grow — they were satisfied with an easy position."

Her company's last fiscal quarter was also disappointing. "We expect-

ed April [sales] to be several million dollars more," Mecca said. "The reason our projections were off is that AT&T had not connected our main office to our latest branch. AT&T is two months behind installing its [long-distance lines], and that has put us at a severe disadvantage. We plan to open another branch in Atlanta in October. If we don't get our long line, we won't be able to open that branch. We have curtailed other expansion plans because of AT&T's inability to deliver its product."

Mecca thinks that Apple Computer, Inc.'s Macintosh is the year's most significant product. "It is a new type of machine with tremendous potential," Mecca said. "I think it will take at least two years to develop software that takes advantage of the machine's capability."

Another area of rapid growth is telecommunications, she said. "Last year, we experienced a sixfold increase in communications sales. This trend will continue as companies' needs to access data bases grow and machines with more memory can download large files."

While Mecca predicted that software margins will erode, she does not agree that the microcomputer industry is experiencing a shakeout. "It is ridiculous to talk about maturity in the market," Mecca said. "This industry is still in embryo; it hasn't been born yet. It is still several years away from birth and is growing at a phenomenal pace. Companies have gone out of business because of poor management, poor products or undercapitalization, not because of a shrinking market."

SYSTEM from page 79

standard multiple-choice menus, the iconographic approach used by Xerox Corp. and Apple Computer, Inc. and the touch screen offered by Hewlett-Packard Co.

Generally, the system should return to the master menu after the execution of any given component. If the system has an attached smart printer (a printer with variable type fonts, spacing features or other attributes), a utility should allow the user to set the features of the printer without going outside the system.

In addition, it is frequently necessary to be able to display the disk directory for any diskette currently online. Most operating systems allow for directory displays, but the workstation user should be able to do this from within the workstation system.

Finally, a menu item on the master menu should allow the user to escape from the system.

Another major component of the manager's workstation is the communications program. An intelligent communications program will also require some disk space in addition to that needed for program storage, but space requirements will not be very extensive, and it is most convenient to have such files reside on the workstation system disk.

Other application programs, such as a note-taking facility and a data management program, will also require files, but these files will almost certainly be placed on disks other than the system disk.

Another design consideration is whether the initial program, which comes up when the computer is turned on, should be a menu program for the entire system or an appointments calendar that automatically reports the day's schedule.

A possible alternative is an automatic log-in to the user's mainframe computer or network, with an automatic execution of the internal electronic mail system, which would immediately display any new messages.

Communications issues are further complicated by the possible need for IBM 3270-style links rather than asynchronous Ascii terminal emulation.

Some of these considerations are a matter of a manager's personal tastes, work style and work demands. A comprehensive workstation design should make such features optional.

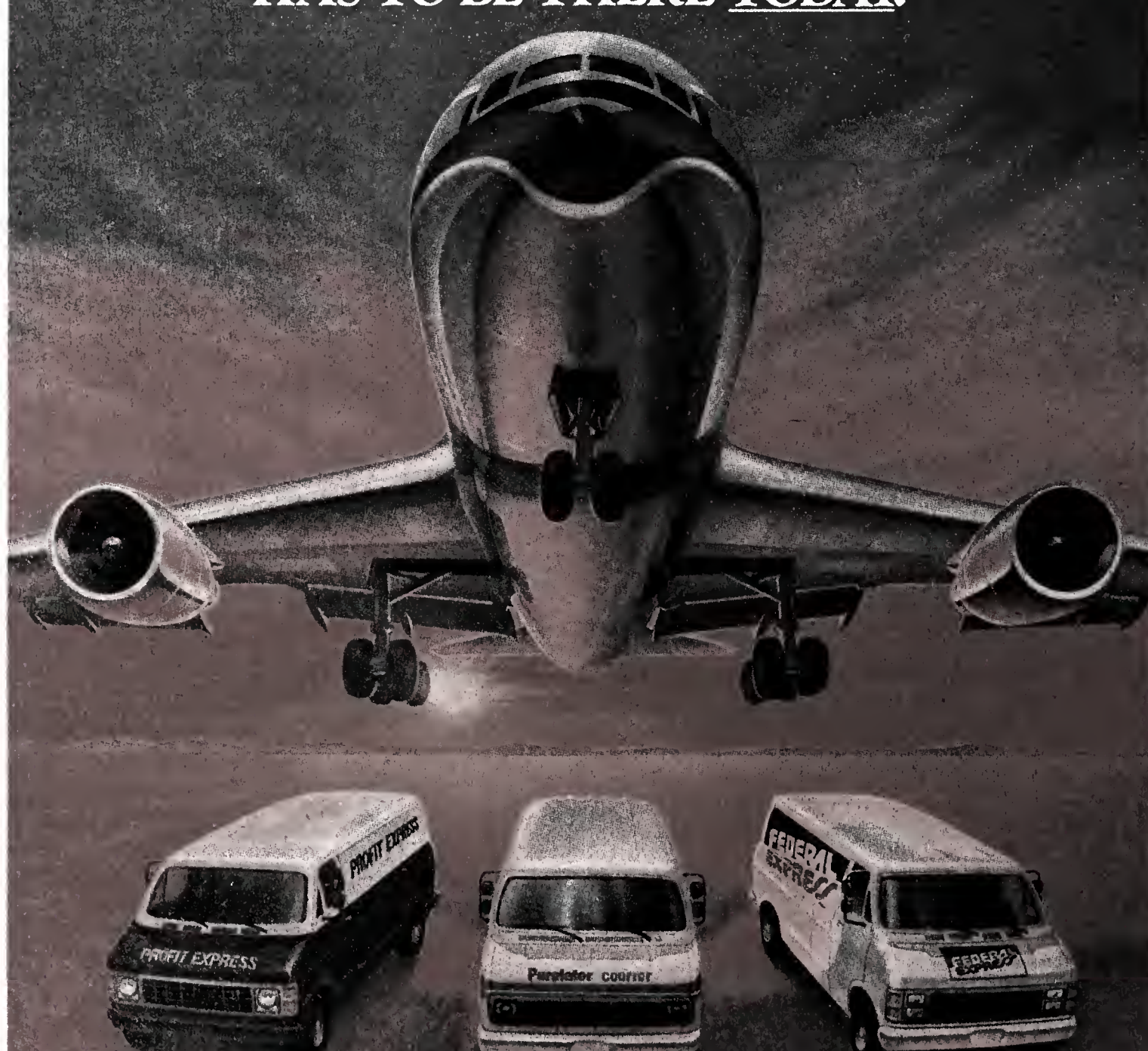
Individual vendor marketing strategies also should be assessed before a final selection of software is made. Because of an implicit black market in microcomputer software, many software publishers and manufacturers are resorting to safeguards that limit the ability to copy or back up programs, although protected software packages may allow transfer to Winchester disks. Without overriding the security locks on the software, it is difficult to combine the various pieces of software on a single disk or two.

Among popular programs, Lotus Development Corp.'s 1-2-3 and Software Publishing Corp.'s PFS:File and PFS:Report are examples of copy-protected systems.

Another problem that may complicate the design of a workstation system is the sheer size of software programs. It may not be possible to put a word processor, a spreadsheet program and a communications program all on the same diskette.


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COMPUTER INDUSTRY

Adapso survey finds software and services industry healthy

By Peter Bartolik
CW Staff

NEW YORK — Companies in the software and services industry experienced an economic rebound in 1983, with revenues growing 22%, and also attempted to move into new areas, Input, Inc.'s President Peter Cunningham concluded recently when he announced the results of the 18th Annual Survey of the Computer Services Industry for the Association of Data Processing Service Organizations (Adapso).

Presenting the survey results and his analysis at Adapso's 11th Annual Financial Forum here June 4, Cunningham said the survey of 540 companies indicates the industry "doesn't have hardening of the arteries."

The industry as a whole brought in revenues of \$33.5 billion in 1983, 22% higher than in 1982. Of that total, the industry breakdown was as follows: processing services, \$11.3 billion, or 13% ahead of the previous year; software products, \$6.7 billion, or 39% ahead of 1982; professional services, \$5.5 billion, or 20% ahead of

1982; and turnkey systems, \$4.1 billion, or 18% ahead of 1982.

"I would characterize 1983 as a year of rebound and also a year of trying new starts," Cunningham said. "Many of the companies in the industry are trying new things, moving into new areas, not always successfully."

The computer services industry "applies computer and communications technology to meet customer needs. It is the only industry that does that, and there is going to be phenomenal demand."

But while there will be great opportunities, there will also be some items about which computer services companies should be cautious, he added. Client companies will not be able to handle the influx of technology by themselves, and the suppliers of software and services must be able to understand how people work, Cunningham said.

Additionally, there will be societal, regulatory and legislative issues all related to the growth of computer and

See FORUM page 101



INDUSTRY INSIGHT

Peter Bartolik
CW Senior Editor

IBM X model price cuts anticipated

One IBM watcher expects IBM within the next 90 days to reduce the prices of its recently announced X models in the 3080 series to try to correct what some people believe is an effective price advantage to older non-X models that can now be enhanced at a relative bargain-basement cost.

Charles Greco, an analyst with International Data Corp. of Framingham, Mass., said IBM created "a price-performance savings to the old [non-X model] boxes, and now they will have to swing it the other way, otherwise why would anyone buy a new [X-model] machine?"

As previously reported [CW, May 28], Greco believes the non-X models, when enhanced for a \$16,000 option price, end up costing roughly 7% less than the new models. Greco said the market in used machines is expected to gear up in anticipation of users scorning the X models in favor of buying the older machines and adding the enhancement. Not only that, but European dealers "are gearing up" to ship the older models to the U.S. in anticipation of that demand, according to Greco, who just returned from Europe.

If that is in fact the case, IBM would find itself without a market for the newer X models, find it isn't going to make any money on the resale of the older machines and will find, therefore, the need for a price cut on the new equipment. "It's an asinine way of doing business," Greco said.

A price cut like that would certainly prove that Big Blue's size creates a high pain quotient when the elephant stubs its toe.

Stuart J. Miller was only on the job two weeks before being called on to represent Software AG Systems, Inc. and its operat-

See IBM page 101



Peachtree Software, Inc., the microcomputer software subsidiary of Management Science America, Inc., is embarking on a major, but somewhat conservative, marketing campaign/88

INSIDE

■ Data General Corp. recently inked agreements aimed at boosting its Comprehensive Electronic Office system, but also was hit with a reinstated anti-trust decision/92

Robotics industry shakeout predicted

By Edward Warner
CW Staff

DETROIT — Although 1984 will be a boom year for robot sales — the first in which any robot manufacturer will turn a profit — competition and "lack of commitment" will kill off 50 or more of today's roughly 60 robot makers in the coming years.

That was the forecast of Laura Conigliaro, a financial analyst with Prudential-Bache Securities and editor of a newsletter on robotics. Conigliaro made her remarks at Robots 8, the national conference on robotics here last week.

"What's wrong with this industry?" Conigliaro asked her audience of roughly 250 robot vendors, engineers and manufacturing industry executives. In answer, she said the lagging sales and intense competition that currently characterize robotics are the result of predatory pricing,

which "is relatively prevalent in the industry."

'Lack of commitment'

To make a bad situation worse, Conigliaro said, many of the industry's largest robotics vendors have exhibited a "lack of commitment. . . . They don't have the commitment, but they're fighting like cats."

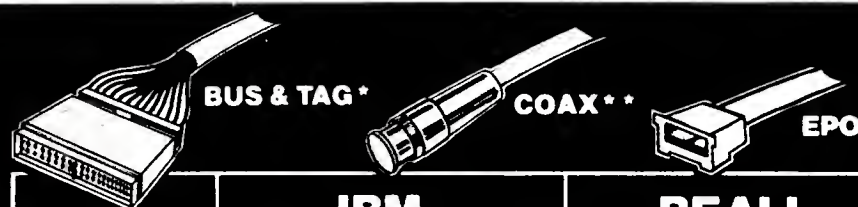
The shakeout predicted by Conigliaro could benefit customers, she argued, saying the net result will be "a cleaner looking industry with fewer variables muddying the water."

Conigliaro attributed what she said was a slow start for robotics in the U.S. to "a painfully slow learning curve" among both robot users and vendors. The users, she said, have often failed to see robot applications, and the vendors realized only a few years ago that they were in the business of

See ROBOTS page 101

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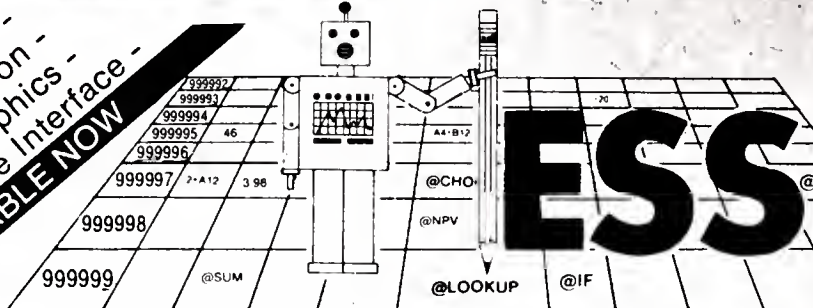
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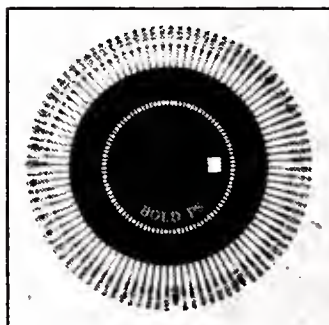


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Chapter 11 offers breathing spell to DP firms in distress



OUTSIDE LINES

Arthur S. Olick

Increasingly, computer companies in distress are turning to Chapter 11 of the Federal Bankruptcy Act for relief.

The industry has come to recognize the reorganization provisions of the act as an attractive alternative to liquidation or forced sale.

Chapter 11 is the viable alternative to lenders' demands for security and personal guarantees or the possibility of lawsuits from trade creditors. Faced with higher interest rates, lower sales, slow collections and tight credit, many computer company executives are opting for the protected realignment of their debt under the aegis of the federal courts. The device presents an immediate "breathing spell" in which to reorganize.

In recent years, even venerable companies have sought refuge under Chapter 11. Chapter 11 has been used when some computer companies have expanded to meet anticipated markets that never materialized. Others have been caught in the crunch of rising interest rates and eroding profitability. Whatever the reason, a well-managed Chapter 11 can provide a means for restoring an otherwise sound business to vitality.

Since 1978

Since the Bankruptcy Reform Act of 1978, Chapter 11 has enabled a distressed company petitioning for relief to continue in its business and retain its assets under a legal umbrella known as Debtor in Possession.

This statute provides the company with certain extraordinary rights and powers while its management remains in place. Notwithstanding manifest fraud or gross mismanagement, debtors will continue to operate their business - protected from creditors and urged to propose a plan of reorganization. While the statute grants this exclusive right for a period of only 120 days, the bankruptcy courts regularly extend the period.

A company need not be insolvent to receive protection under the statute. Moreover, while most debtors are unable to pay their debts as they mature or have liabilities in excess of their assets, Chapter 11 is available to any business that, in good faith, invokes its protection in order to meet special problems requiring reorganization.

However, a debtor that seeks to utilize the statute only to delay or frustrate creditors, without any re-

alistic expectation of reorganization, may have its petition dismissed for abusing the jurisdiction of the bankruptcy court.

One of the most important protections afforded by the statute is the automatic stay. Legal actions and proceedings pending at the time the petition is filed and all legal actions and proceedings that may be filed thereafter come to an immediate halt. Creditors are frozen in place and may not press their claims against the company except in the context of the bankruptcy court proceedings.

The automatic stay is broad in scope, stopping both the commencement and continuation of civil suits and all acts to create a lien, collect or enforce claims or to recover property and the enforcement of judgments and judicial and consensual liens.

The filing of a petition to seek protection under Chapter 11 operates as a "Chinese wall" behind which all pre-petition claims are held until they may be resolved in an orderly manner consistent with the survival of the company, if indeed, survival is at all possible.

Accounts receivable are collected and used for ongoing operations. At the same time, accounts payable remain outstanding and cannot be discharged except in the context of a plan of reorganization. The debtor continues to operate in business without the necessity of servicing its institutional debt or satisfying its pre-petition trade creditors - at least for a reasonable time.

Generally, a debtor's property becomes the property of the debtor's estate. A landlord may not cancel a favorable lease upon the advent of a Chapter 11, thereby realizing a windfall. Instead, the debtor may transfer or "sell" its leases to third parties so long as the arrears are paid and defaults are cured. The benefit of the bargain belongs to the debtor and its creditors.

A paramount goal

One of the paramount goals of a Chapter 11 is to effect the equitable distribution of available assets among competing creditors. Accordingly, the Debtor in Possession statute empowers the company not only to collect its assets extant at the time of the petition, but also to avoid certain transfers or transactions that would frustrate an equitable treatment of creditors similarly situated.

The company can also avoid transfers or obligations if any actual, unsecured creditor with an allowable claim could do so. Even if only one triggering creditor exists, the company can void the transfer in its entirety and is not limited in its recovery to the amount of that single creditor's claim.

Those creditors, who may have extracted payment or security from the debtor on account of antecedent debt within 90 days prior to the

See ACT page 101

Olick is one of the founding partners in the New York- and Washington, D.C.-based law firm of Anderson, Russell, Kill and Olick. He specializes in bankruptcy proceedings.

From



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COMPUTER INDUSTRY

MSA embarks on major marketing scheme cautiously

By Peter Bartolik
CW Staff

NEW YORK — Peachtree Software, Inc., Management Science America, Inc.'s (MSA) micro software subsidiary, is embarking on a major marketing scheme with 25 recently announced packages, but company executives here recently noted the conservative underpinnings of the campaign.

Speaking with financial analysts at the 11th Annual Financial Forum held by the Association of Data Processing Service Organizations June 4, MSA executives said TV commercials will only be aired in areas where dealers have proven a market exists

and that Peachtree "won't be a leader" in developing software for Apple Computer, Inc.'s Macintosh.

Dennis V. Vohs, executive vice-president of both MSA and Peachtree, previewed the marketing campaign for the new software products and revealed some of the strategic decisions behind the campaign.

During the next few weeks, Vohs said, Peachtree will be talking to some 2,500 to 3,000 dealers "to see what we can put on the shelves during the first go-around."

The company announced 25 new packages April 26 and will herald that development with slick TV spots declaring "America's software grows

on the Peachtree."

But those ads will only run on a cooperative basis with dealers in particular areas. "We are not going to speculate with TV advertising; it will be financed by products sold in that particular market," Vohs explained.

Peachtree brought out business products for use on IBM and compatible microcomputers and educational and home products for the Apple II computer. But with regard to the much-ballyhooed Macintosh from Apple, Peachtree is only "putting our toes in the water with one product, and if it's successful, we'll follow it with more," Vohs said, adding, "we won't be a leader there."

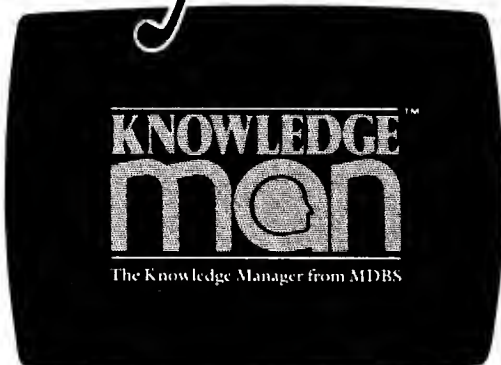
The Mac is generally targeted to the college market, Vohs said, and "you can't sell a lot of software in that market." The company only wants to supply software for the major products in a particular market — that is, Apple in the schools and IBM in the offices — and will only offer packages for compatible machines that can accept the software with little rewriting.

The company has also added extra features into various packages to make them more attractive and stand out from the crowd, Vohs said. The rationale, he added, is that dealers with limited shelf space will not offer both a Lotus Development Corp. Symphony and an Ashton-Tate Framework, but will instead select one or the other and then search for other products.

With a stable of 67 packages on the market, Peachtree believes it is well positioned to survive any new product announcements from competitors. "We can get hit [by competing vendors] in a dozen products and still have a lot of products," Vohs said.

William M. Graves, president of both MSA and Peachtree, said the company projects micro software products will generate domestic revenues of \$29 million in fiscal year 1984, a 73% increase over 1983.

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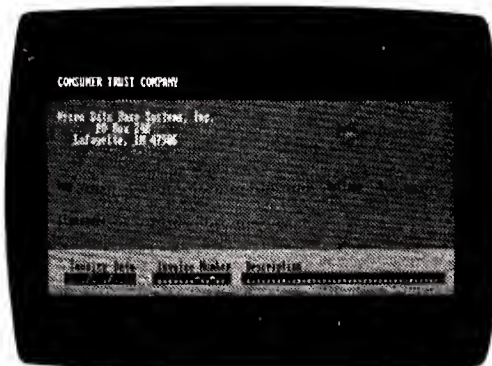
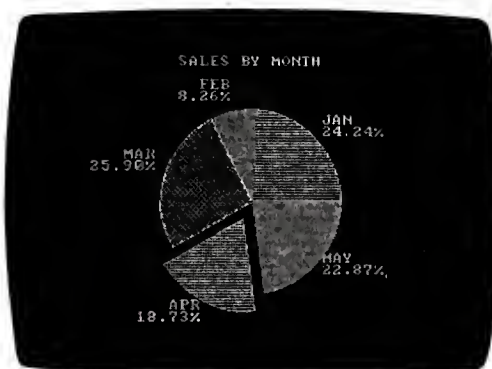
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Chairman named amidst top-level flux at Franklin

PENNSAUKEN, N.J. — Franklin Computer Corp. continued its recent shake up of top-level management by announcing the appointment of Morton E. David as chairman and chief executive officer.

David, 47, who until recently served as chairman of Mura Corp., a Hicksville, N.Y., communications equipment manufacturer, succeeds R. Barry Borden, who resigned last month.

Borden cited "philosophical" differences over daily management of the privately held microcomputer and peripheral maker.

The announcement marks the third major management change at Franklin in three months.

In April, the company's president, Avram C. Miller, resigned. Subsequently, Joel Shusterman, a founder of the company who had quit in January, returned to the company as executive vice-president and acting president.

David, a graduate of City College of New York, holds a law degree from Harvard University. David sold the Mura company two years ago.

In a prepared statement, Shusterman said: "There's no question that we've had our fair share of management instability, but with Mort David's appointment, the other executive changes we have made and the successful introduction of our new CX series of personal computers, I feel we now have a team, structure and product strategy in place that is well tailored to our growth plans."

"...and trust me, when your information needs grow, you can always connect all your PCs together."

There's a lot of optimistic talk going on about networking today. Not lies, but perhaps wishful thinking.

Talk, in fact, that's making those in the know very nervous.

An alarming lack of standards among manufacturers has stalled the development of software applications packages for networked personal computers.

As a result, offices that attempt to connect their existing personal computers together find an appalling absence of programs that really share data.

Personal computers were simply designed for individual use, not for sharing information among each other within an office.

So, meanwhile, countless department heads, data processing managers and small business owners are indefinitely stuck with various personal computers that won't talk to each other – a predicament only acceptable in offices where no one works together.

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The Fortune solution comes as a complete, ready to use package – including software – designed from the beginning as a multi-user system.

The Fortune 32:16 runs on the industry standard Unix™ operating system. Unix affords you a wide variety of powerful business programs.

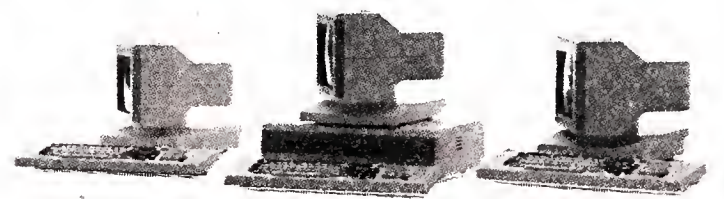
It's also an operating system developed for multi-user computers and programming flexibility.

The Fortune 32:16 multi-user system was made specifically for the constantly growing needs within businesses. It's simple, flexible and cost-effective.

And best yet, it's here now.

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But until that day, a lot of people will be keeping their fingers crossed.

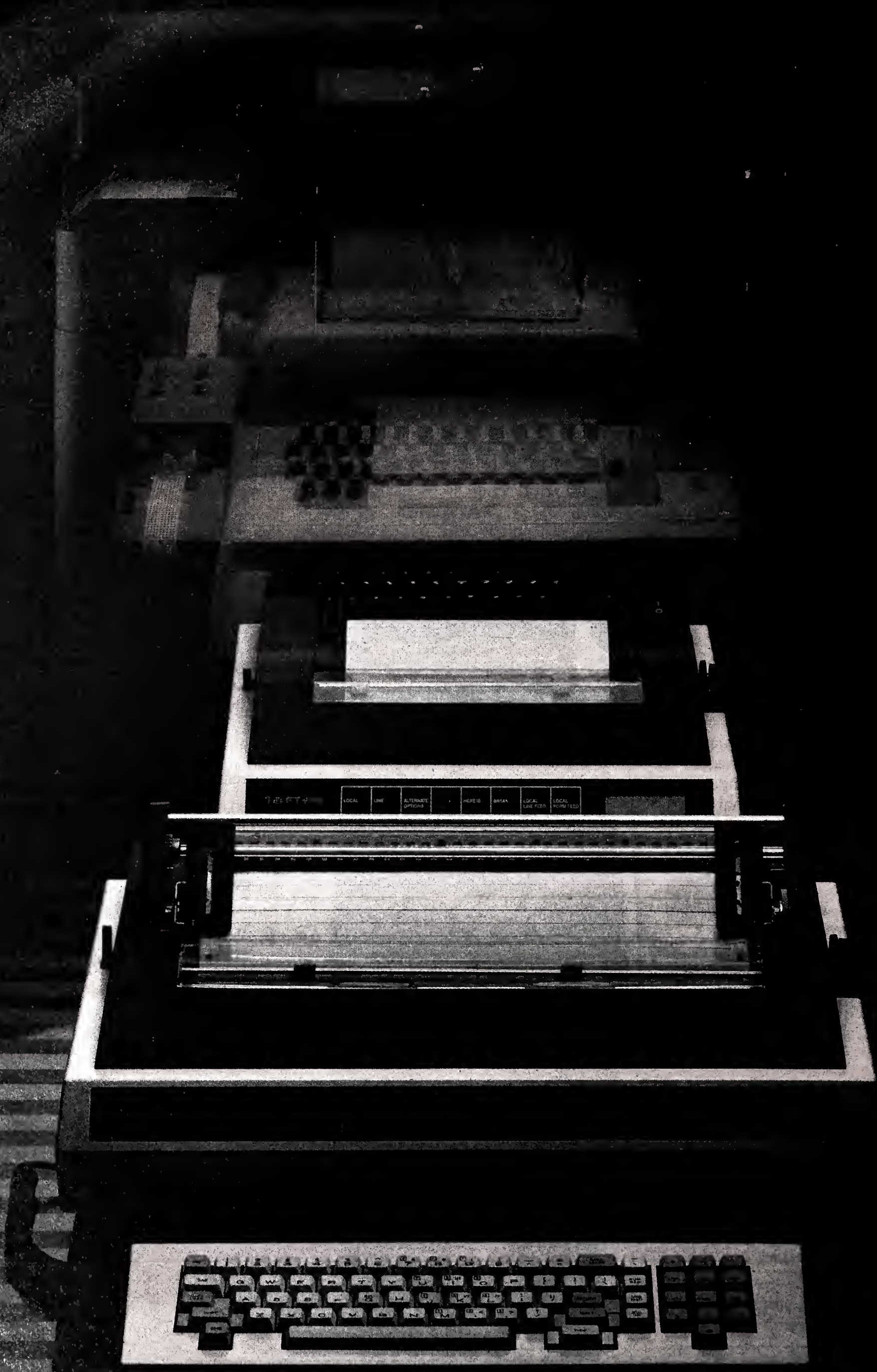


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The 5300 is available with a built-in 300/1200 baud modem that saves desk space and makes it possible for the 5300 to do all dialing and logon functions. So you can access a CPU or timesharing network by simply depressing a key on the detached keyboard.

For printing versatility, the 5300 is hard to beat. It features graphics capabilities as well as emphasized, expanded and compressed printing. And when used as an auxiliary printer, the 5300 is well-suited for use with most ANSI display-based terminals such as the Teletype® 5410 and 5420.

You'll also appreciate the forms handling of the 5300. It is available with adjustable push or pull tractors; a roll paper holder, a supply rack and an accumulator.

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COMPUTER INDUSTRY

DG seals pacts to boost its CEO system

WESTBORO, Mass. — Data General Corp. recently announced two cooperative agreements aimed at boosting the vendor's Comprehensive Electronic Office (CEO) office automation system.

DG signed a deal with Cullinet Software, Inc. under which CEO will be integrated with Cullinet's Information Database (IDB). The link is said to allow CEO users to access a variety of major data base management systems (DBMS) through IDB.

The computer manufacturer also announced an agreement with MCI Digital Information Services Corp. that will integrate CEO with the MCI Mail nationwide electronic mail sys-

tem.

The integration with IDB reportedly will allow users to access IBM mainframe data without having to write programs or learn mainframe operating procedures.

IDB can be used to gather and summarize data from the following DBMS: Cullinet's IDMS/R, IBM's IMS and DL/I and Cincom Systems, Inc.'s Total as well as conventional flat files and external data bases. CEO users can download the extracted data without affecting the integrity of the corporate data base, a spokesman said.

The location of the data must be defined either interactively by the

user or in a directory that is maintained on the DG machine. The spokesman said the procedures to access IDB data will be similar to the commands required to access data on the DG processor.

The required software for the link now exists in IDB, the spokesman said. The software module for CEO will be available in early 1985. Pricing has not been set.

DG's agreement with MCI provides for the two companies to cooperatively develop an integrated product, to be marketed by DG, which will allow CEO users to send and receive documents through MCI Mail and to manipulate MCI Mail within CEO.

DG to seek rehearing on antitrust case

WESTBORO, Mass. — Data General Corp. said it will seek a rehearing on a federal appeals court ruling that the company violated antitrust laws by licensing its Nova operating system software to its Nova central processing unit.

Fairchild Camera and Instrument Corp. and Digidyne Corp., the plaintiffs in the suit, won a jury verdict in June 1981 that Data General had violated the Sherman Antitrust Act. But the judge in the case ruled that the verdict was contrary to the evidence and overturned the decision.

The 9th U.S. Circuit Court of Appeals in San Francisco, on June 7 reinstated the jury verdict and ordered the case returned to a trial court to determine damages.

Fairchild has estimated that it has incurred damages of as much as \$100 million. Under the antitrust law, any damage award would be tripled automatically, according to a Fairchild spokesman.

The appellate court ruled that Data General had unlawfully forced customers of its Nova operating system to buy Nova computers by tying the hardware and software together.

Practice continues

Mike Klatman, a spokesman for Data General, said the company continues its practice of requiring that a user of a DG operating system purchase the hardware on which it operates. He claimed other major computer manufacturers follow a similar practice.

In a prepared statement, Data General said it believes that the appellate court decision is "not in accord with recent U.S. Supreme Court decisions." DG said that it may appeal to the Supreme Court prior to the damages trial.

Data General said it "continues to believe that the conclusion of the case will not have a material adverse effect on its business or financial condition."

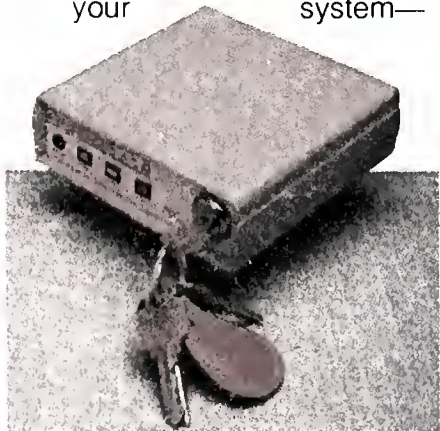
Jack Brown, an attorney representing Fairchild, said in a prepared statement that he was "gratified with the vindication of Fairchild's position" and "looks forward to the court order putting an end to Data General's anticompetitive business practices."

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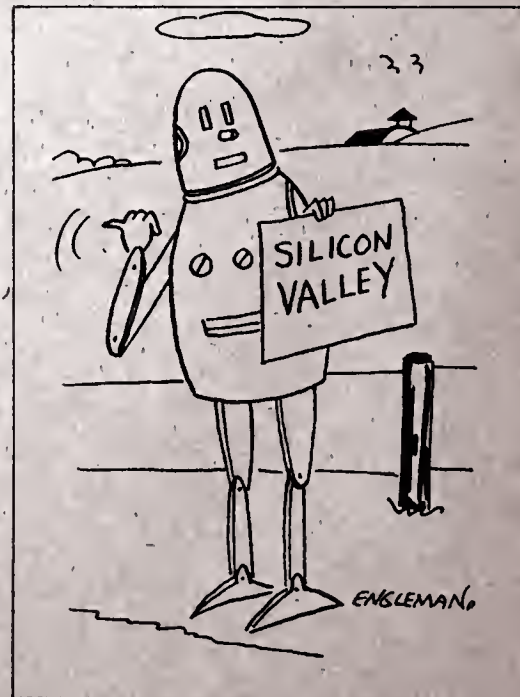
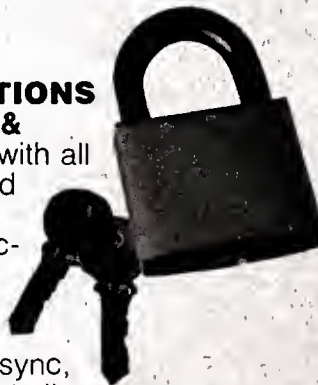
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COMPUTER INDUSTRY

Computer knowledge a requisite for success: IDG chief

NEW YORK — Computer knowledge will be a requirement for business success by the end of the decade when 75% of the U.S. population will have access to computers, International Data Group (IDG) Chairman Patrick McGovern told an executive conference on new communications strategies here recently.

Speaking to a conference held by Link Resources Corp., a consulting group owned by IDG, McGovern noted that the majority of computers in the U.S. are already controlled by noncomputer professionals.

IDG is also the parent company of International Data Corp. and CW Communications, Inc., which pub-

lishes *Computerworld*.

By the end of the decade, those computers will be accessed by 75% of the country's population, he maintained. "Computer literacy will be a requirement for management competence in the future, and employers who don't provide access to this technology won't be able to compete for the brightest and best," McGovern said.

By 1992, three out of four Americans will have an electronic information center available to them daily and there will be 350 million computers installed around the world and 500 million "information-based devices," including telephones and in-

teractive televisions, populating the world, according to McGovern.

McGovern said this spread of access has been the tradition in the computer industry. "The history of this industry is the migration of technology to broader and broader groups of people, with software becoming more simple and transparent to users, and machines [hardware] becoming more reliable," he maintained.

The number of men and women with control over computers boomed from 20,000 in 1956 and 140,000 in the early '60s to seven million in 1978, "the vast majority of which were no longer computer profession-

als," McGovern said. Proliferation of access began in the early '70s, he added.

Within the field that Link Resources has named the electronic services industry, including telecommunications and videotex, McGovern said "the key to success" will be companies' "ability to participate on a multinational level in a worldwide market."

Electronic services firms that succeed will obtain their money at the cheapest possible source, manufacture in the ideal location, even if that means going outside the U.S., and distribute their products effectively, according to McGovern.

Ask shuts micro subsidiary

LOS ALTOS, Calif. — Ask Computer Systems, Inc. recently announced the closing of its microcomputer software subsidiary, Ask Micro, Inc., and the scheduled sealed-bid auction for licensing rights to its Accounting Plus micro software products.

Ask Micro, which was formerly known as Software Dimensions, Inc., was acquired by Ask Computer Systems in June 1983.

Sandra L. Kurtzig, chairman and chief executive officer of Ask, said, "the market for micro-based Accounting Plus software is simply not as large as our primary market, and the Ask Micro business, representing less than 4% of our total business, was too small for us to continue as major players."

Ask Computer Systems had revenues of about \$18 million for the last quarter, Kurtzig said. Revenues for the subsidiary were not available, but it had been losing money, she added.

Robert J. Riopel, executive vice-president and chief financial officer, said the cost of closing the Folsom, Calif.-based micro subsidiary would be approximately \$850,000, or seven cents per share, for the quarter ending June 30.

That amount could be reduced by any sales of paid-up licenses accrued by June 30, he added.

Ten software products that run on IBM-compatible micros and micros running Digital Research, Inc.'s CP/M will be offered on a one-time license basis, either exclusively or nonexclusively. Bids will be accepted on individual product lines, individual products within lines or on all product lines. Ask said it will require minimum bids of \$50,000 per package for IBM-compatible products and \$10,000 per package for CP/M-compatible products. Bids will be opened June 27.

Ask spokeswoman Allison Hartmann said 35 people were employed at the software subsidiary and that three had been offered jobs with the parent company while all others had been encouraged to apply for jobs. The parent company has limited facilities to accommodate all the affected employees, and some may not desire to relocate to the Los Altos area where housing is more expensive, Hartmann added.

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ware pioneer Gordon Eubanks is featured in Part 2, with an overview of the data base software available for micro computer users. Part 3 takes a look at Lotus Development's success with 1-2-3, the product that caught the market by storm. And finally, in Part 4, experts discuss communications as the most powerful PC application.

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COMPUTER INDUSTRY

DEC to forge net for campus

HOUSTON — Digital Equipment Corp. and the University of Houston recently announced plans to create a multicampus, high-speed computer network valued at up to \$70 million, with DEC providing the university with grants of up to \$35 million.

The university, during the first two years of the four-year program, plans to utilize as many as 4,500 DEC Professional and Rainbow 100 personal computers, along with clusters of DEC VAX superminicomputers distributed throughout the four campuses of the university.

Upon completion, the integrated network will support up to 20,000 personal computers for instruction,

research and administrative activities.

DEC Ethernet local-area networks on all campuses will interconnect workstations through a high-speed microwave channel capable of transmitting over 1M char./sec, and students and faculty will be able to access the network via telephone links from workstations at home, officials said.

One-third of the workstations will be made available to faculty, staff and students.

The remainder of the workstations will be in faculty and staff offices and clustered around the campuses for student use.

Price, reliability, service found key in government OA shopping

By Edward Warner
CW Staff

FRAMINGHAM, Mass. — State and city governments are choosing their office automation equipment on the basis of price, service and reliability and are paying little attention to whether it provides vertical applications usage, a recent survey showed.

The survey, conducted by International Data Corp. (IDC), a research and consulting firm based here, also found that city and state governments show little preference for buying personal computers either direct-

ly or from dealers, but both strongly favor direct buying for word processing equipment.

Journals useful

The poll also noted that the buyers of office automation (OA) equipment in both city and state government get the majority of their product information from trade journals and trade shows, not from other users.

That finding diverges from that of an October 1982 IDC study, which found that business users of OA equipment tend to rely on other users for product advice and recommendations.

The IDC survey on OA and personal computer purchasing and usage patterns was conducted by telephone and included 25 respondents from state government and 24 from city governments with no less than 1,000 employees.

Among the survey's conclusions was that for state government, OA equipment is a significant item in all respondent's budgets, but within that spending, personal computer expenditures vary widely and do not correlate with the state's size.

That finding, the survey continued, makes sense when viewed beside another of the survey's conclusions: that personal computer acquisition is a more recent phenomenon than word processing equipment buying by state government, a process that began in the early 1970s.

The cities polled, meanwhile, report having spent significantly less on personal computers than the states.

The average number of personal computers in use by the cities is 24, and only two cities report spending more than \$50,000 annually on the small computers, while two others report spending more than \$100,000.

The survey also noted that most personal computer software purchases by state government are made from their hardware vendors and that few industry-specific applications are in use.

Vertical applications

Personal computer software in use by the cities in the poll shows a greater inclination toward vertical applications.

Nine of the respondents are using software written specifically for governmental use, including police dispatching and housing authority management.

Five of those applications are from third-party vendors and two are authored in-house.

Procurement methods used by both the cities and states polled are largely centralized. All of the states have central agencies for OA equipment buying and 14 report having approved vendor lists, which all require prior application by the vendor. Only half of the cities have such lists, however.

Neither the states nor the cities of the survey show a preference for buying personal computers directly or from dealers, except in the survey's five states with personal computer budgets greater than \$1 million annually. There, four out of five chose to go direct.

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COMPUTER INDUSTRY

Datapoint out to capture its share of OA market

By David Myers
CW New York Bureau

NEW YORK — Datapoint Corp. has weathered an accounting scandal, more than a year without a single product introduction and a recent management shake-up, but the company believes its woes are behind it.

David R. Fernald, marketing vice-president for the San Antonio-based leader of the local-area network business, said Datapoint expects the newly unveiled personal computer it is reselling for Convergent Technologies, Inc., together with its announced intention of opening the five-year-old Arcnet network to IBM Personal Computers, to boost the

company into an even fight for the growing office automation market.

"Whenever we get to play we don't do badly at all [in competing for contracts]. It's when we don't get to play that we have troubles," Fernald explained in an interview prior to Datapoint's introduction of the Vista-PC, a color monitor version of the Convergent Technologies N-Gen microcomputer being sold by eight other computer vendors.

Fernald said Datapoint had decided to resell another manufacturer's machine rather than producing one of its own because the invention of new CPUs is something at which the company realized it could not excel.

"That technology belongs to other people," he noted.

Instead, Datapoint will concentrate on further development of the Pro-Vista office automation "software blanket" that will tie the Convergent machines to Datapoint's Arcnet network in December and make the small computers "applications-compatible with everything we've ever done. That [software development] is where we ought to be spending our money," Fernald said.

Fernald admitted, however, that there may be problems with reselling the Convergent system.

For one thing, Convergent reportedly has yet to be able to deliver the

micro in large quantities. Raytheon Co. cited this inability in announcing its decision to disband its Raytheon Data Systems unit, which had unveiled a private-label Convergent system in January.

Fernald said, "We're not getting as many [units from Convergent] as we project the demand to be."

Another problem with Datapoint's version of the Convergent equipment is that it will not run popular microcomputer programs such as Lotus Development Corp.'s 1-2-3 financial spreadsheet under the RMS operating system that controls Datapoint's local-area network.

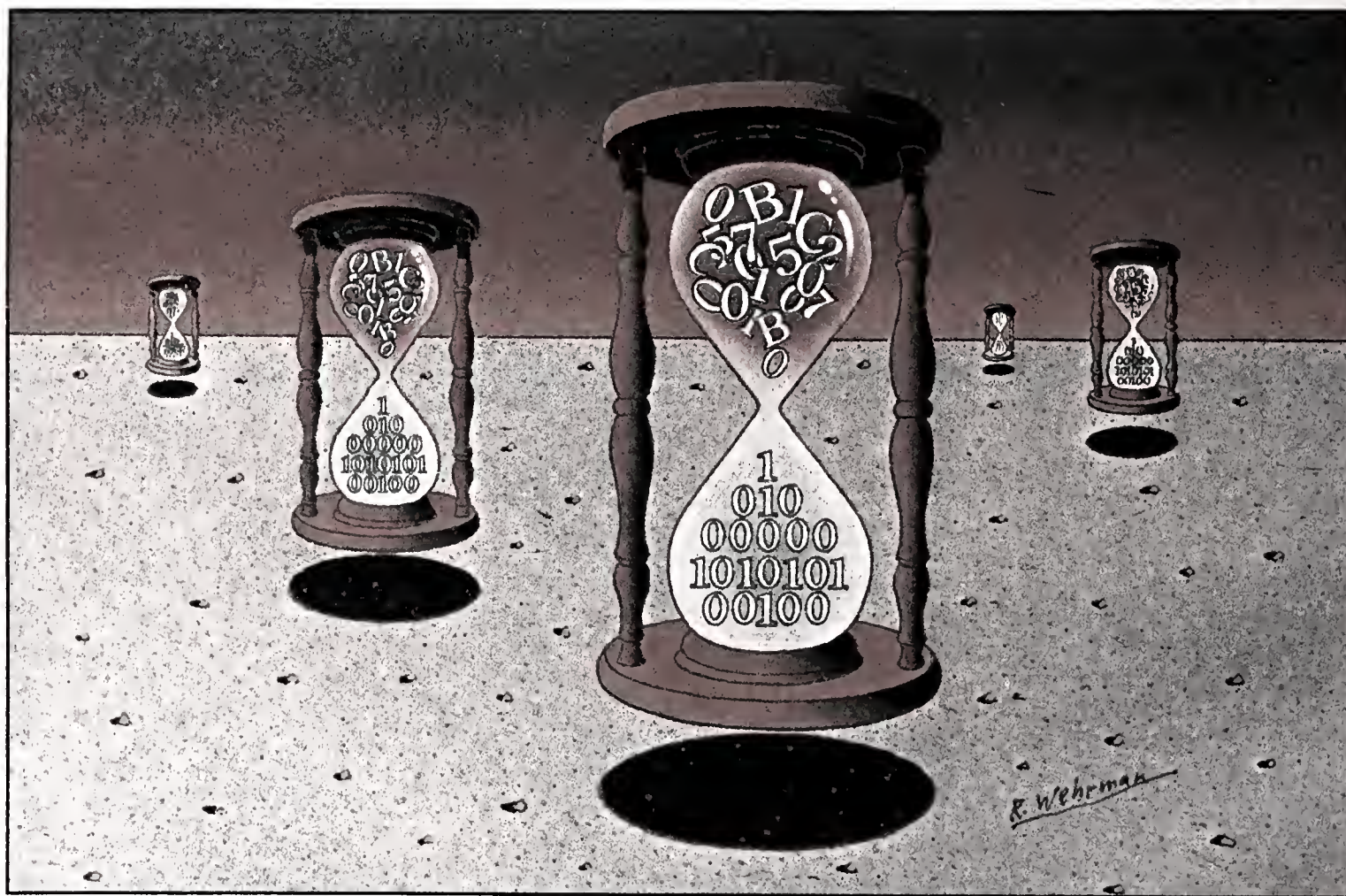
Fernald said Datapoint is working at putting the microcomputer's disk operating system under RMS, but added, "You don't do it overnight. It can take decades."

Still, he insisted the Convergent micro is not a stopgap product for Datapoint and will not be replaced by a later micro of Datapoint manufacture.

As for IBM compatibility on the firm's Arcnet network, Fernald said it will be "a hardware solution. We want to make the IBM [Personal Computer] look like something it isn't," he explained.

Compatibility is expected to be ready later this year, he added. "We already know how to do it. We're just not ready to announce it yet," Fernald said.

Without complete understanding of user needs, software development can take forever.

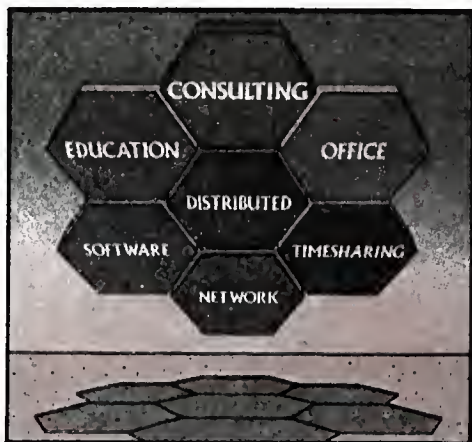


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Or write him at BOEING COMPUTER SERVICES, P.O. Box 24346, MS 6K-86-12B, Seattle, Washington 98124.

Gerber profits nearly triple

SOUTH WINDSOR, Conn. — Gerber Scientific, Inc. reported fourth-quarter profits of \$5.19 million, or 45 cents per share, an increase of 193% over profits of \$1.77 million, or 19 cents per share, during the comparable period one year ago.

The company said sales for the fourth quarter increased 40% to \$53.73 million, compared with \$38.29 million for the same period last year.

The per-share earnings and weighted average number of share amounts reflect a three-for-two stock split in the form of a 50% stock distribution to shareholders declared in June 1983, the company said.

Gerber President H. Joseph Gerber said the firm's strong showing resulted from a strong demand for its computer-aided design and manufacturing (CAD/CAM) systems for factory automation applications.

Gerber Systems Technology, Inc., an 80%-owned subsidiary of Gerber Scientific, reported a consolidated net loss of \$568,000, or 17 cents per share, for the fourth quarter ended April 30, compared with net earnings of \$147,000, or 5 cents per share, during the year-ago period.

The company said sales for the fourth quarter were \$5.64 million, compared with \$6.2 million for the same period a year ago.

The company, which manufactures turnkey CAD/CAM systems, also reported that new orders received for the year ended April 30 increased to \$23.58 million, compared with \$20.02 million a year ago.

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COMPUTER INDUSTRY



MERGERS AND ACQUISITIONS

Genasys Corp., Rockville, Md., has announced the acquisition of **RDW Systems, Inc.**, McLean, Va., as a wholly owned subsidiary. This acquisition adds to Genasys' client base in the federal, state and commercial marketplaces. Terms of the sale were not available.

Object Recognition Systems, Inc. (ORS), Princeton, N.J., announced it has reached an agreement to acquire **Productivity Systems, Inc. (PSI)**, Farmington, Mich. ORS intends to acquire PSI in exchange for 30,000 to 48,000 shares of stock, depending on revenues of PSI over the next eight months.

Science Management Corp. (SMC), Bedminster, N.J., announced that it has completed the first phase of the restructuring of its ownership in **SMC Seicom**, a joint venture company engaged in the marketing of the Seiko business computer in North America.

Previously, SMC had been a 64% common stock owner of SMC Seicom with Hattori Seiko Ltd., Seikosha Ltd. and Tokyo Boeki Ltd., all of Tokyo, owning the remaining 36%.

Under the new arrangement, SMC now owns 36% of SMC Seicom's common stock, and the Japanese partners own the remaining 64%.

McCormack & Dodge Corp., London, a company of the **Dun & Bradstreet Corp.**, has announced the acquisition of the computer software division of **RTZ Computer Services, Ltd.**, Bristol, England. RTZ will be renamed M&D Ltd. and will market and support M&D products throughout the UK and the Republic of Ireland. Terms of the acquisition were not available.

Informatics General Corp., Woodland Hills, Calif., announced the agreement on the sale of its **Data Services Operation to Mellonics Systems Development**, a division of Litton Industries, Inc. Terms of the agreement were not disclosed.

Measurex Corp., Cupertino, Calif., announced it has signed letters of intent to acquire **Management Decisions Development Corp. (MDDC)**, Fairfield, Ohio, and **MDDC Systems Ltd.**, Montreal, excluding the College Admission and Registration Systems business. Terms of the acquisition were not disclosed. MDDC develops, sells and services computer systems for the paper industry.

Hewlett-Packard Co., Palo Alto, Calif., announced it has acquired certain assets of **Ekoline**, a division of Xonics, Inc. Terms of the transaction were not disclosed.

Gerber Scientific, Inc., South Windsor, Conn., announced that its wholly owned subsidiary, **Gerber Garment Technology, Inc.**, has agreed to acquire the assets of **RPN Systems, Inc.**, Bellevue, Wash., for cash and notes. The agreement is subject to further negotiation, the execution of a definite agreement and the approval of the boards of directors of both parties.

Trademark fight pits Siliconix against IR

SAN FRANCISCO — Siliconix, Inc., a Santa Clara, Calif.-based semiconductor manufacturer, recently filed suit here against International Rectifier Corp. (IR) for more than \$5¼ million in a trademark dispute involving the marketing of semiconductor components.

The suit, filed in the U.S. District Court here, seeks a declaration that IR does not have an enforceable U.S. trademark for metal oxide semiconductor field effect transistor (Mosfet) discrete components designated with the letters "IR," "IRF" or "IRFF." IR, based in El Segundo, Calif., claims it does have such a trademark.

In addition, Siliconix is asking for compensatory and general damages of \$300,000 and punitive damages of \$5 million against IR for allegedly "fraudulently and deceptively misleading the public" about Siliconix's ability to produce high-quality Mosfet parts and for reputedly disrupting the firm's relationship with its distributors.

Derek Lidow, IR's vice-president, refused to comment on the Siliconix charges except to say that the company is reviewing the suit and is planning to issue a statement later.

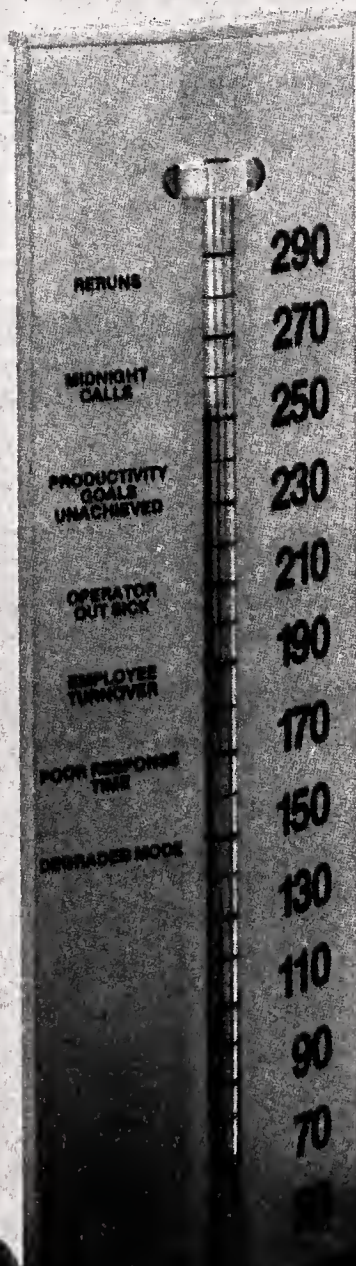
Among other activities, Siliconix manufactures and markets, as a second source, products for Mosfets ini-

tially developed by IR. According to Siliconix, the adoption of alphanumeric labels originally selected by another manufacturer is common practice by companies that are second-sourcing the same semiconductor components.

According to the suit, other companies that are, or have been, using the IR designation include Motorola, Inc., RCA Corp. and General Electric Co.

According to IR, only RCA has, to date, resolved its dispute with the vendor through an out-of-court settlement in which RCA agreed not to use the IR nomenclature once it depletes its current stock of Mosfet components.

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COMPUTER INDUSTRY

Dysan posts second-quarter loss; blames R&D costs

SANTA CLARA, Calif. — Dysan Corp. reported a net loss of \$1.5 million, or 9 cents a share, for the second quarter ended May 5, compared with operating profits of \$2.2 million, or 13 cents a share, before security gains, for the same period a year ago.

The company's second-

quarter 1983 net income, which included a net gain of \$20.2 million, or \$1.18 a share, from the sale of securities, was \$22.4 million, or \$1.31 a share.

The company posted no gains on securities sales in the 1984 second quarter. Net sales for the quarter were \$57.3 million, up from \$44.9

million in the year-ago period.

The company attributed its second-quarter operating loss to continued high research and development and manufacturing costs for its increased density 5¼-in. rigid disk drive and under-5-in. flexible and rigid disk operation.

Other factors contributing to the loss, the firm said, were a continued softness in the OEM markets for Dysan's flexible disk and 5¼-in. rigid disk, as well as start-up costs associated with its new Colorado facilities. In addition, a reduction in interest income also affected second-quarter profits.



SUPERSHORTS

Proteon, Inc. has signed a \$2.8 million contract with **Quadram Corp.** to distribute Proteon's Pronet networks nationally for the IBM Personal Computer. The contract calls for several thousand Pronet local-area networks to be delivered in the next year.

Gateway Computer has been selected by **AT&T** as a value-added reseller of the AT&T 3B computer family in the Western United States.

QIS, Inc. has signed a distribution contract with **NCR Corp.** to market and support Qtime products on the NCR I tower running under RMCOS and Unix and NCR personal computers supporting MS-DOS. NCR is planning to market Qtime as a stand-alone product as well as integrating it with existing NCR software products.

Microdata Corp. has entered into a joint marketing agreement with Bellevue, Wash.-based **Anacomp, Inc.**, commercial systems division. The agreement gives Microdata the opportunity to act as a market representative for Anacomp's Manufacturing Management and Control System.

MAI/Sorbus Service has been selected by **Tallgrass Technologies Corp.** to supply nationwide service support for that company's hard disk drives and tape storage systems for the IBM personal computer products.

Cullinet Software, Inc. has been added to Standard & Poor's Corp.'s 500 Index as the index's only exclusive software representative.

Zoltech Corp., a newly formed company, has been created to develop and market products based on Digital Equipment Corp.'s Q-Bus.

Datapoint Corp. announced that it is implementing a national vendor leasing program with **General Electric Credit Corp.** Under the leasing plan, Datapoint customers will have an additional financing option when ordering Datapoint hardware and software.

Charles River Data Systems, Inc. announced three new field service programs: an on-call service contract, time and materials contract, and a depot maintenance contract. The program, for customers using its Universe 68 supermicrocomputers, will be carried through **Infoforex, Inc.**, which has 73 service locations in 38 states.

Continued on page 100

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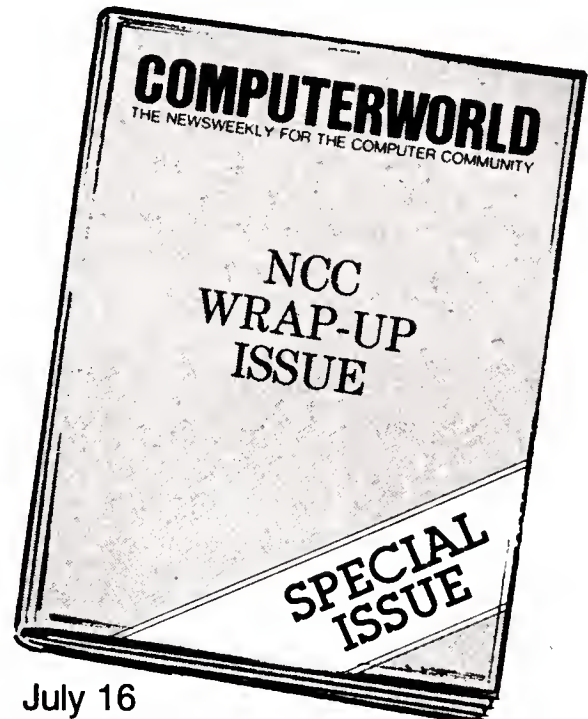
If you're not in *Computerworld's* next five special reports, look at the issues you'll miss



July 9

NCC Show issue

We'll highlight *Data Pro's* yearly hardware survey. Readers always enjoy studying other user's candid ratings of systems and vendors.
Closes June 22



July 16

NCC Wrap-up issue

Part 2 of *Data Pro's* hardware survey. Also, we'll recap the major product announcements and happenings at the show.
Closes June 29



August 27

Minis and small business systems

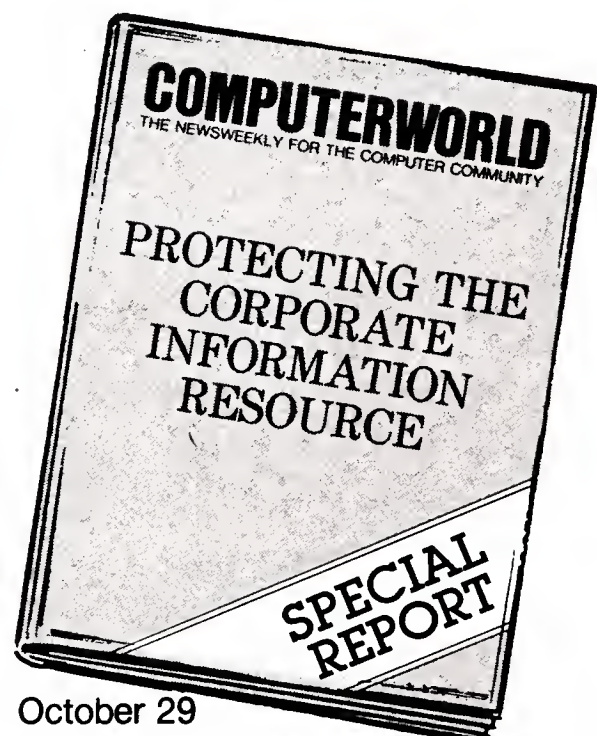
We'll take a close look at the growing number of applications. Plus we'll include reports from users on the problems they've had in selecting and implementing these systems, and how they solved. Also, we'll offer vendors' suggestions on how to increase the efficiency and cost-effectiveness of minis and small business systems.
Closes August 10



September 24

Data Base Management Systems

A comprehensive report geared toward a realistic understanding of DBMS. We'll include articles from users and industry experts on how to evaluate, select, implement, and trouble-shoot DBMS. And we'll update recent developments, as well as offer users' solutions to common and not-so-common DBMS problems.
Closes September 7



October 29

Protecting the Corporate Information Resource

We'll discuss how to protect hardware & software resources, people resources, and physical plants. There'll be articles on: uninterruptible power supplies, data security monitors, data encryption software, disaster recovery centers and contingency planning.
Closes October 12

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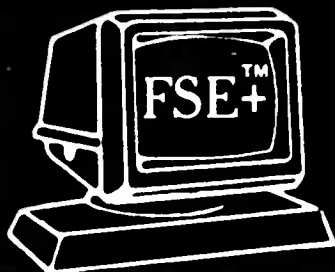
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COMPUTER INDUSTRY

Continued from page 98

Data General Corp. and **Centel Corp.**, business systems unit, have announced a three-year, \$50 million agreement for Centel to offer DG's integrated office automation systems, 32-bit Eclipse MV family computer systems and Desktop Generation computer systems in a 27-state market area in the U.S.

Lloyd's Register of Shipping has placed an order for a worldwide network of over 100 **Prime Computer, Inc.** 2250 minicomputers. This is one of the largest orders ever placed for Prime 2250s. Lloyd's will install its systems in more than 50 countries to enable it to communicate up-to-the-minute technical information and current ship survey data with overseas offices.



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EXECUTIVE CORNER

Paramin, Inc. has been renamed **Linkware Corp.** and has appointed **Larry R. DeBoever** president.

Donald P. Moffett has joined **Fujitsu Systems of America, Inc.** as president and chief executive officer, and **Kevin R. Murphy** has been promoted to senior vice-president of marketing for **Fujitsu Systems of America**.

Carl A. Michelotti has been

named senior vice-president at **Zenith Electronics Corp.**

Walter J. Schuelke has joined **Sperry Corp.** as vice-president of manufacturing planning in the firm's computer systems operation.

Ernest J. Dieterich has been appointed vice-president of technology for **Honeywell, Inc.**'s office management systems division.

Joe Bunik has been named vice-president of computer automation at **California Devices, Inc.**

Dr. William Chu has been appointed executive vice-president of engineering at **Verticom, Inc.**



NICKELS AND DIMES

Wyle Laboratories reported profits for its first quarter of \$3.2 million, or 42 cents per share, compared with \$749,000, or 13 cents per share, one year ago. Revenues were \$93 million, compared with \$60.4 million one year earlier.

Televideo Systems, Inc. announced revenues for the second fiscal quarter ended April 30 of \$48.4 million, compared with \$41.5 million

one year earlier. Profits were \$5.6 million, or 14 cents per share, compared with \$5.5 million one year ago.

Computer Memories, Inc. announced profits for the fiscal year ended March 31 of \$1.4 million, or 14 cents per share, compared with \$1 million, or 12 cents per share, before extraordinary items in 1983. Revenues were \$47.4 million, compared with \$16 million one year ago.

Micro D, Inc. reported profits for the second quarter of \$345,000, or 5 cents per share, compared with \$295,000, or 7 cents per share, one year earlier. Revenues were \$27.1 million, compared with \$18 million one year ago.

Zymos Corp. reported a net loss of \$2.5 million in the second fiscal quarter ended April 30, compared with a net loss of \$1.9 million in the comparable period last year. Revenues increased 155% to \$5.1 million, compared with \$2 million a year earlier.

Systems Industries, Inc. announced profits for the quarter ended May 1 amounted to \$93,000, or 2 cents per share, compared with \$73,000, or 1 cent per share, a year earlier. Revenues were \$32.9 million for the third quarter, an increase of 50% from \$21.9 million one year earlier.

Analog Devices, Inc. announced revenues for the second quarter ended May 5 of \$77.6 million, a 49% increase over the second quarter of 1983. Profits for the quarter were \$9.3 million, or 34 cents per share. These amounts represented increases of 118% and 100%, respectively, from 1983's second quarter.

Icot Corp. announced a third-quarter net loss of \$570,000, compared with a net loss of \$1.9 million for the comparable period in 1983. Revenues were \$5.1 million (which included \$1.7 million in sales of micrographics products and services), compared with \$3.4 million in revenues for the same period one year earlier.

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COMPUTER INDUSTRY

IBM from page 85

ing subsidiary, Software AG of North America, Inc. at the recent financial forum sponsored in New York by the Association of Data Processing Service Organizations (Adapso). Nevertheless, Miller was quite capable of expressing enthusiasm and high hopes for the future of the company.

As newly named president and chief executive officer, Miller said he brings to his position 22 years of experience in software and systems, gained mainly at Sperry Corp. He is most recently "responsible for introducing Sperry to the office systems business."

From that background, Miller said, he has an extensive understanding of "end-user expectations."

Miller said his No. 1 strategic goal

is to stabilize Software AG's revitalized earnings-per-share growth and keep it on the upward curve, something no doubt that the stockholders will be most pleased to hear.

He also indicated that the company will become more aggressive in terms of advertising: "You're going to see more of us in the market over the next 12 months."

Company Chairman John Norris Maguire, asked to comment on the relatively poor performance of company stock, said he believes the stock market still wants to see further evidence that the company has put behind the financial problems of 1982 when escalating expenses cut deeply into profits.

"It takes a long time to rebuild the credibility that existed before that time," he said.

ROBOTS from page 85

selling integrated systems.

One area of robotics specialization that will show tremendous growth this year will be vision systems, she said, calling it a segment that "is growing like it's been shot out of a cannon."

A surprise in Conigliaro's analysis was her prediction that GMF Robot-

ics, a joint venture between General Motors Corp. and the Japanese robot maker Fanuc, will this year take the No. 1 spot in market share from Cincinnati Milacron, Inc.

GMF Robotics gained a 9% market share and a third-place posting last year, and this year it will double its market share, "largely because it has a wealthy parent," according to Conigliaro.

FORUM from page 85

communications technology, and the suppliers must be willing to face those issues, he said.

Reiterating comments made at last fall's Adapso management conference [CW, Oct. 31], Cunningham said the federal government's rapidly increasing demand for software and services will produce a personnel pinch for companies that hope to be the suppliers.

Input projected that federal spending for software and services, which was \$5.5 billion in 1980, will grow to \$10.3 billion in 1985 and rocket to \$41.4 billion in 1990.

Demand for embedded systems software was projected to grow from an estimated \$9 billion in 1984 to \$22 billion in 1988. "Where are the

people going to come from?" Cunningham asked.

Total user expenditures for information services was \$34 billion in 1983 and was projected to grow to \$90 billion in 1988, according to Cunningham.

Analyzing issues that face the industry, Cunningham said he believes the growth of software products, a 39% revenue growth in 1983, can be sustained over the long term. Companies providing processing services may find financial help through vertical integration and also by targeting cross-industry specialty markets, he said.

Cunningham noted that 306 of the companies surveyed reported revenues of more than \$10 million for 1983; that was 45 more companies in that category than in 1982.

ACT from page 86

filing, may be compelled to return what they received. Preferential transfers in the period prior to filing for relief under Chapter 11 are voidable. All creditors similarly situated must be treated alike. Thus, the lender that extracts a mortgage or a pledge of corporate stock to secure an overdue debt may be compelled to disgorge and restore the status quo ante.

The objective of Chapter 11 is to devise a program of settling the business debts so that the debtor can emerge as a viable entity. Thus, it is customary for creditors to make concessions as to how much and when they are to be paid.

There is no requirement that all creditors be treated alike; in most cases they are divided into classes based upon their legal rights. The classification is important because all members of a class receive the same treatment, and the majority of the class binds the minority.

Once confirmed, a reorganization plan constitutes a judicially sanctioned contract among the parties, which determines their respective

rights in full satisfaction of all prepetition claims. Plan confirmation procedures are court-supervised to ensure full disclosure of relevant facts, satisfaction of voting requirements, the best interest of creditors and the feasibility of the plan. The debtor gets a fresh start.

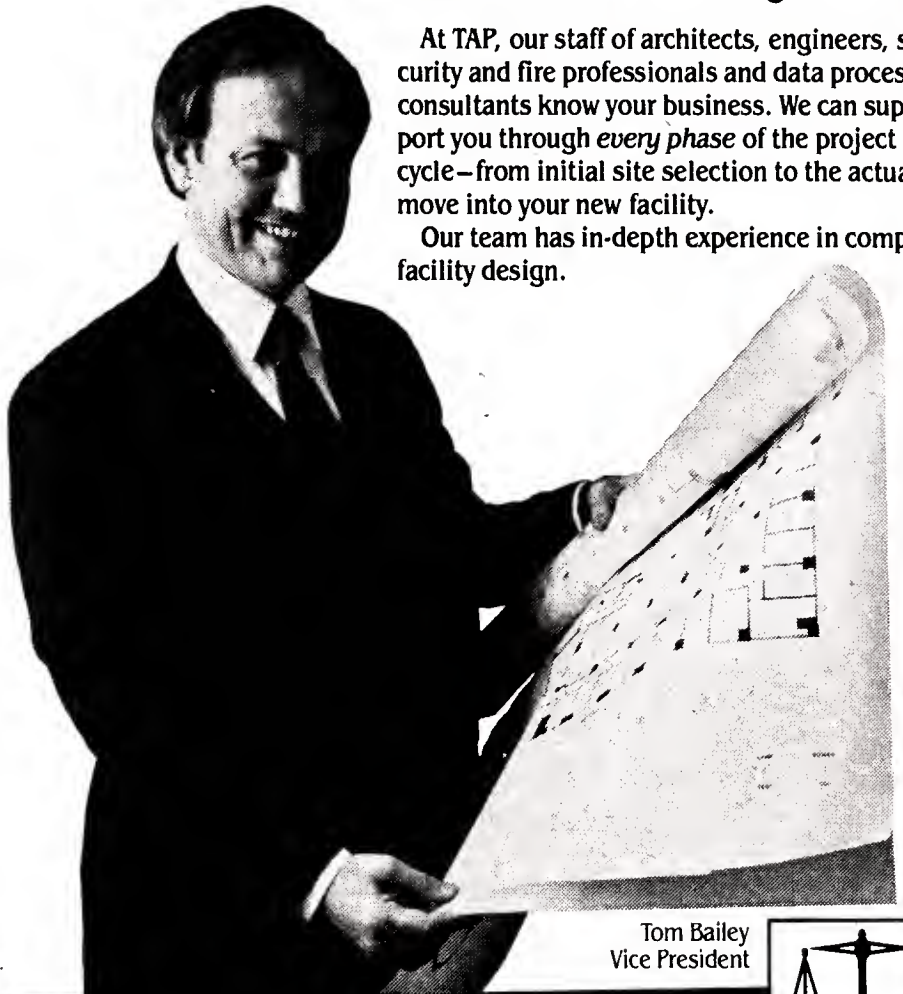
Chapter 11 is by no means a panacea. It imposes upon debtors the obligation to negotiate with various creditor constituencies a resolution of their respective claims. It mandates judicial supervision of the debtor's activities to a far greater extent than otherwise exists.

It also carries with it the possibility that equity interests may be impaired to satisfy debt. It presents the possibility of liquidation should a reorganization plan not be presented within a reasonable period of time or fail to secure the requisite approval of creditors.

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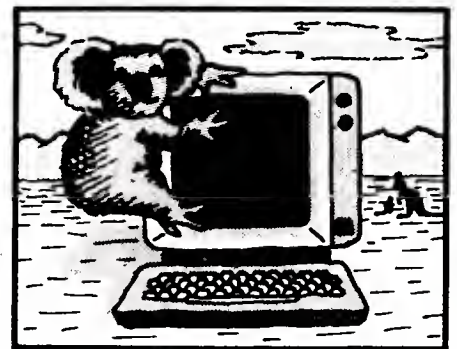
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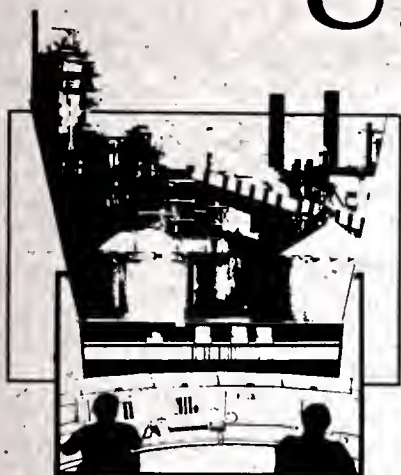
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Developing sophisticated software for fourth-generation, state-of-the-art microprocessor based distributed network, and operating work stations for Process Management and control systems. All in REAL TIME, adhering to ISO standards, with fault recovery and security requirements.

Several positions at all levels are available for Software Engineers who possess a BS or MS in Computer Science or related field and at least five years' directly related experience in the following areas:

Distributed Multiprocessing

Developing and using the latest operating systems, languages (PASCAL, C), distributed databases, and 16/32 bit microprocessor machine architectures.

Interactive Graphics

Updated in real-time; providing a natural, intuitive operator interface that is almost totally graphical in nature.

Data Communications

The most advanced i.e., PROWAY and IEEE 802 LANS, GATEWAYS, X.25, etc.

Applications Software

Configuration, optimization, plant management...

For the above positions, please contact Steve Anderton, Building. 6-2.

RD&E

This group is involved in the conceptualization and development of new products for all phases of process control from pneumatic to digital.

Research Engineer

Involved with Expert Systems and human process interfaces, with emphasis on application to process exception management.

To qualify, candidate must have an MS in Computer Science or Electrical Engineering with experience in high-level language programming (PASCAL, C and others) plus LISP and AI.

Senior Systems Programmer

You will develop software for new analytical instrument systems as well as participate in development planning for future analytical products.

You must have an MS in Computer Science or Electrical Engineering with experience in Assembly, PLM, real-time operating systems, Intel Systems, MDS, and communication systems in local area network architecture.

For the positions in RD&E, please contact Russ Maloney, Building 6.

SYSTEMS AND SERVICES DIVISION

Responsible for the design, development, integration, and support of software and hardware for unique customer applications to process control.

Requirements

MS or BS, Computer Science, EE. Various real-time assembler software experience is required. Desirable experience in PASCAL, FORTRAN, C, BASIC.

Sr. Software Engineer

Provides technical software support to customers and field personnel on real-time operation system software.

Systems Programmers

Responsible for the proper technical design and integration of software for unique customer requirements. This includes standard Foxboro products, software modification, and communications with non-Foxboro devices.

For the above positions, please contact Claire Johnson, Cocasset Building.

Project Programmers

Support the design, implementation and check out of real-time, process control application software for various user industries, i.e.; oil and gas, chemical, pulp and paper, and power generation.

For the above positions, please contact Steve McCafferty, Cocasset Building.

DATA PROCESSING

Increased business and user demands have generated the following professional career opportunities in our Data Processing Center whose large main frame installation is headquartered in Foxboro, MA.

Data Base Analyst

Working with all functional groups in CIRO to provide support for the IMS DB/DC environment and its application systems. DB/DC system design including backup, recovery, and checkpoint restart. Act as Project Manager for the DBA on major projects. Provide assistance and support for IMS education throughout CIRO. Must have seven to ten years' experience as a data base analyst in a medium or large scale IBM installation. Most recent three years' experience with IMS DB and DC. Bachelor's Degree preferred.

FOXBORO

Senior Systems Programmer

Will work with all functional groups in CIRO to provide support for the DB environment and its application systems. Must have five to nine years' experience as a data base analyst in a medium or large scale IBM installation. Most recent three years' experience must include direct design and support work with IMS DB and DC. Bachelor's Degree or equivalent experience.

Systems Software Specialist

Responsible for development and support of UNIXTM-based software development tools and applications software on VAX 11/780 computers and workstations. Will participate with users in defining software tools requirements and specifications. Must maintain current knowledge of UNIX and communications environment. Must have three to five years' working experience with UNIX (preferably Berkeley version). Working knowledge of VMS, Ethernet, and X.25 communications a plus. BS in Computer Science preferred.

*UNIX is a registered trademark of AT&T Bell Laboratories.

Systems Programmer

Will be responsible for analysis, design and overall planning for Computer Center Software Systems. DEC RSTS/E and/or RSX-11M operating system generation, installation and maintenance experience desirable. Must have five to nine years' programming. MS, MA in Engineering, Computer Sciences or equivalent.

Analyst/Programmer

Will perform in moderately complex situations requiring a thorough knowledge of system design techniques and standard programming languages (COBOL and ASIST). Thorough knowledge of teleprocessing techniques (IMS DC). Must have two to five years of work experience in Information Systems with the standard programming language (COBOL), including one to two years in program design.

Senior Designer Programmer

Will perform complex programming assignments under occasional technical guidance. Interfaces with Account Representatives and business analysts. Devises or modifies procedures to solve complex maintenance problems using data processing. Interfaces directly with users in analyzing and resolving complex maintenance issues. Must have five to nine years' work experience in data processing of which five must have been in the programming field, preferably with the standard programming language (COBOL). Bachelor's Degree or equivalent.

For the above positions, please contact Arnold E. Amirault, Building 20.

Foxboro offers a complete benefits program that features cash profit sharing, employee investment plan, tax sheltered savings, excellent advancement opportunities, paid pension plan and tuition assistance.

To arrange for an immediate interview, please send a resume or detailed letter to the individuals specified above. The Foxboro Company, 38 Neponset Avenue, Foxboro, MA 02035. Foxboro is an equal opportunity employer, M/F.

If you have a PC or Terminal with 300 baud dial-up capabilities, then explore our opportunities in-depth by calling our Career Data Base at (617) 549-4444 and enter carriage return. Our Computers are manning the phones 24 hours a day, 7 days a week.



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Our client, a major systems software firm, seeks a SENIOR MANAGER to lead a team responsible for architectural design of a large scale distributed transaction processing system.

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Must have a degree and 5 or more years experience in a MVS, JES, IMS and CICS environment with proficiency in JCL and Assembler. Communications software product knowledge desirable.

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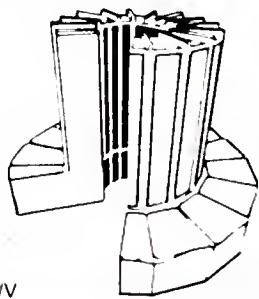
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PROGRAMMER ANALYSTS (11) - Minimum of 3 years experience programming in COBOL with a minimum of 2 years in the analysis and design of on-line systems. Familiar with OS-utilities.

MANAGER TECHNICAL SUPPORT (1) - 6-8 years experience with IBM large systems, OS/MVS, JES2, NCP, ACF2, CICS. Experience with ADABAS, COMPLETE, NATURAL, helpful. College degree & supervisory experience required. Will manage software support, hardware & DASD utilization.

SOFTWARE SPECIALISTS (2) - 1-5 years IBM OS/MVS experience. Qualified candidates will have familiarity with one or more of the following - MVS SP1-3, JES2, NCP, ACF/VTAM, CICS, NCP, DISOSS, DFDS, ACF2, ADABAS.

DATA BASE SPECIALISTS (1) - 1-5 years IBM large system experience with concentration on data base management software, ADABAS experience desirable.

COMMUNICATIONS SPECIALIST (1) - 1-5 years experience in IBM SNA network, NCP programming & debugging, network configuration, operation of statistical multiplexers, line loading.

PRODUCTION CONTROL MANAGER (1) - 3-5 years experience in large IBM environment supervising scheduling of batch work & staffing help desk for on-line users. Experience with OS/MVS JCL, utilities, & production recovery procedures required. Good communication skills essential.

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(215) 545-0494

Steve Goldsmith
6821 Southpoint Drive North
Jacksonville, FL 32216
(904) 737-3018

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We also have an opening for an experienced Systems Programmer to join our existing technical services department. A thorough knowledge of DOS/VSE operating system (Power RJE/Shared Spooling, CICS, VSAM, DL/1) is required. This individual will be responsible for Sysgens, PTF application and performance tuning. Any exposure to VM/SP, VM/HPO, IOCP or MVS is a plus. Please submit resume and salary history in complete confidence to:

Ms. Linda Anderson
Franciscan Sisters Health Care Corporation
333 North Madison
Joliet, IL 60435

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Business Manager required to analyze and organize office operations and procedures with emphasis on computer accounting procedures. Must be willing to relocate to Canada and speak French. 3 years accounting experience required. 40 hours/week. M-F. \$1,000/Month. Contact Utah Job Service, 1234 South Main, SLC, UT 84147. Job Number 03931.

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Plan and coordinate library computing systems, including the DG MV8000 minicomputer for library circulation and catalogs and 10 IBM PCs for administrative systems. Oversee department staff (1 professional and 1 paraprof). Required qualifications: knowledge of systems analysis and programming; ability to write detailed programs in at least 1 high level language (prefer MVS/MUMPS); ALA accredited MLS, or MS in Computer or Information Science. Salary to \$30,000/year, depending on qualifications. For full job description, send resume and names of three current references to: Arnold Hirshon, Associate Director for Technical Services, Cabell Library, Virginia Commonwealth University, 901 Park Avenue, Richmond, VA 23284. Deadline: July 15, 1984. EEO/Affirmative Action Employer.

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Sohio

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Digital Engineers:

BSEE/CE/CS with 3 to 5 years experience in the design of digital hardware. The position will offer the opportunity to work with programmable logic arrays, state machines, microprogrammable hardware and design of gate arrays and semi custom logic.

Software Engineers:

BSEE/CS with a minimum of 3 years experience in the design and implementation of software for data communication systems. Will be responsible for the development of modular real-time software under multi-tasking executives for local area networks using communication protocols of ISO, DOD and IEEE.

Interested persons should send their resumes in complete confidence to Linda Sachs.

Interactive Systems/3M
3920 Varsity Drive
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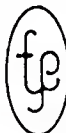
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- 3-5 years experience in VM/SP operating system and a background which includes proficiency in system dump analysis, OS systems programming, ISPF/CMS, ACF/TCAM, VM/Pass-through and RSCS networking. Technical degree desirable.
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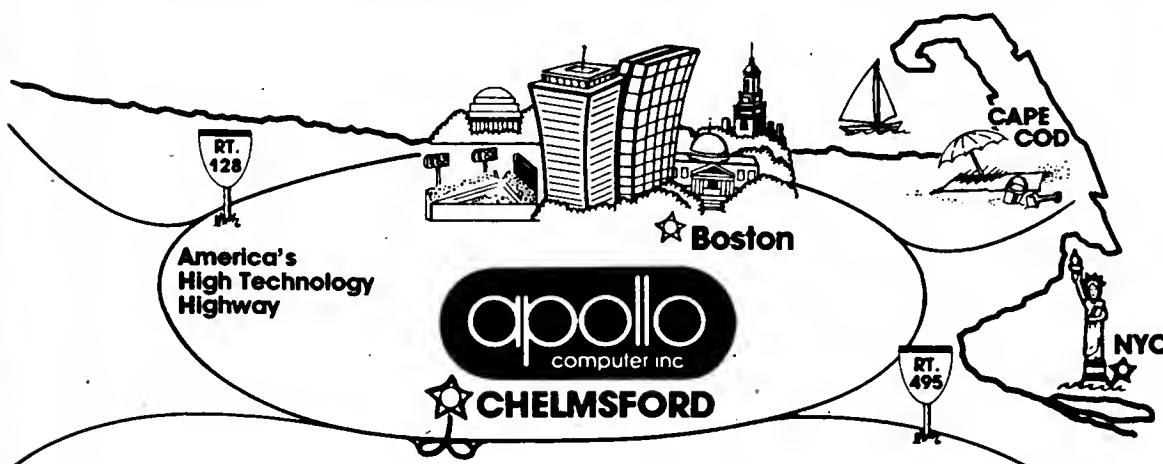
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- **Programmer Analysts**—With a minimum of 4 years design and coding experience in financial application (CICS experience) or manufacturing applications. A Bachelor's degree is required.
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If you are interested in joining our team, we invite you to send your resume with salary history, (in strict confidence) to the following address:

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You will need at least two years' of directly related experience on MVS/SP, including work in system performance measurement and tuning in a shared DASD environment. Knowledge of Boole and Babbage software and familiarity with CICS/VS is a plus.

We offer an excellent salary and benefits package. Please send resume including salary history to: L.J. Riss, Technical Support Director, MC 14010, Cummins Engine Company, P.O. Box 3005, Columbus, IN 47202-3005. An equal opportunity employer, M/F/H/V.



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Snyder's of Hanover, Inc., a major snack food company based in Hanover, PA, seeks an accomplished data processing professional to manage, develop and maintain business applications on its state of the art System 38. The DP Manager is responsible for coordinating systems design and analysis with users and staff as well as consultants. The successful candidate will have a minimum 5 years experience in the data processing field with at least 2 years as Data Processing Manager or Project Leader and will be familiar with RPG and COBOL languages. Communications experience a plus! Bachelor's degree in Computer Science or Accounting/Business Management preferred.

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Engineer

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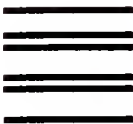
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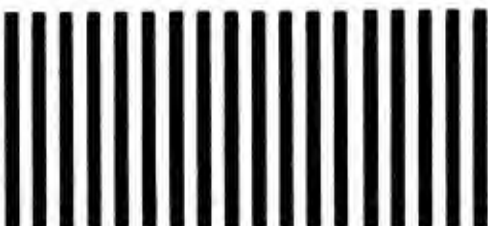
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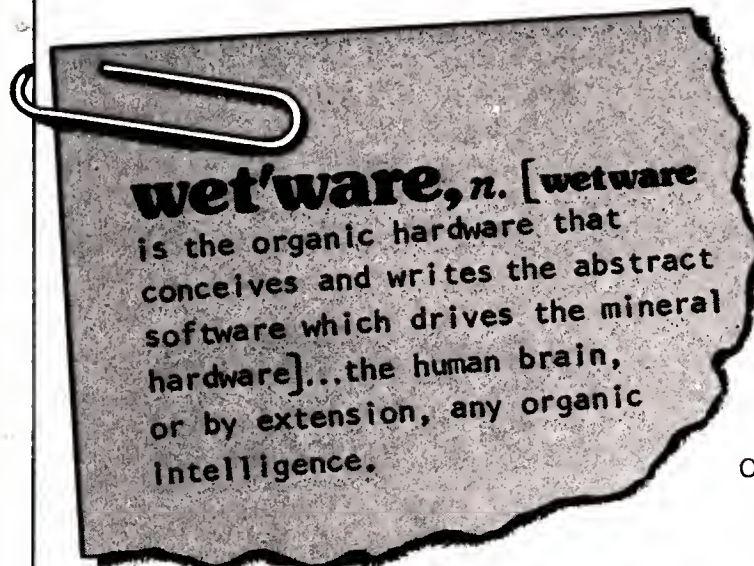
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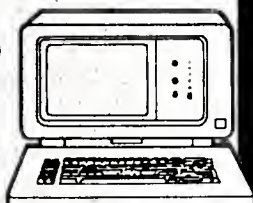
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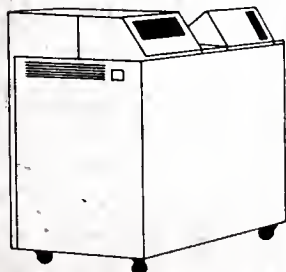
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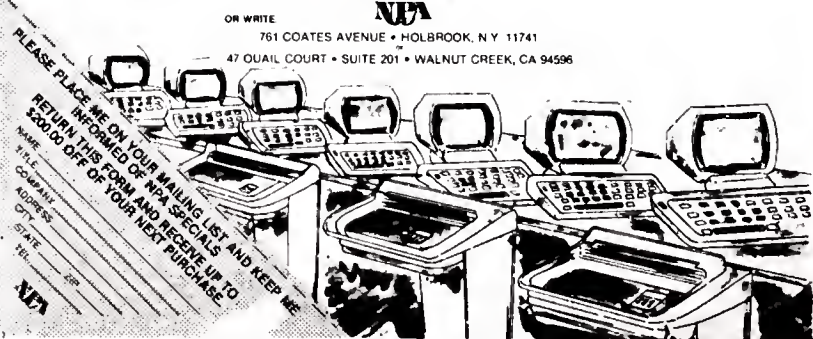
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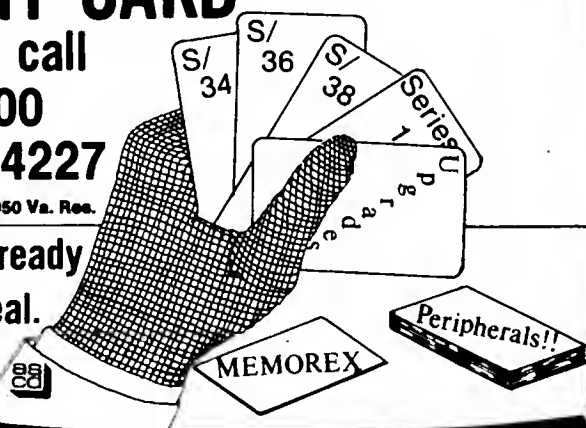
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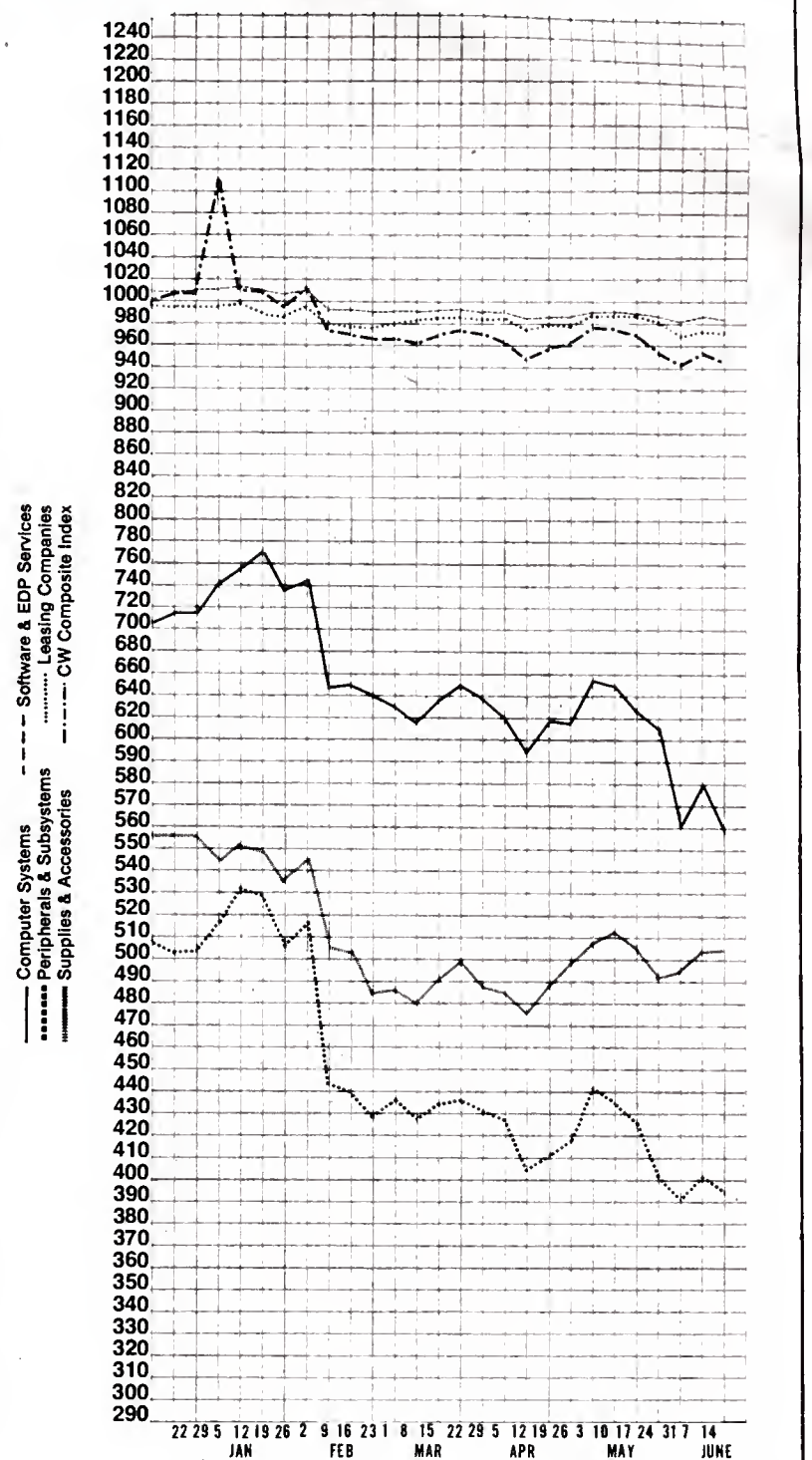
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Computerworld Stock Trading Index



Computerworld Stock Trading Summary

CLOSING PRICES WEDNESDAY, JUNE 13, 1984

All statistics compiled,
computed and formatted
by
TRADE QUOTES, INC.
Cambridge, Mass. 02139

TRADE QUOTES

| E | X | 1983-84 | CLOSE | PRICE | WEEK | WEEK |
|--------------------------|------------------------|---------|---------|--------|-------|------|
| C | C | RANGE | JUN 13 | CHNGE | CHNGE | PCT |
| H | H | (1) | 1984 | | | |
| COMPUTER SYSTEMS | | | | | | |
| O | ALPHA MICROSYSTEMS | 11-24 | 11 7/8 | -3/8 | -3.0 | |
| O | ALTOS COMPUTER SYST | 8-28 | 10 3/8 | +1/4 | +2.4 | |
| A | AMDAHL CORP | 9-30 | 11 3/8 | -3/8 | -3.1 | |
| O | APPLE COMPUTER INC | 18-63 | 28 3/4 | +3/4 | +2.5 | |
| N | AT&T | 15-70 | 15 5/8 | +1/2 | +3.3 | |
| N | BURROUGHS CORP | 28-38 | 31 1/2 | +3/8 | +0.7 | |
| O | COMPUTER AUTOMATION | 8-17 | 6 | -7/8 | -12.7 | |
| A | COMPUTER CONSOLES | 8-26 | 16 3/4 | -1 1/4 | -6.9 | |
| N | CONTROL DATA CORP | 21-62 | 31 3/4 | +1/4 | +0.7 | |
| O | CONVERGENT TECHNOL | 12-41 | 12 5/8 | -1 5/8 | -11.4 | |
| N | CRAY RESEARCH INC | 20-58 | 45 3/8 | -1 | -2.1 | |
| N | DATA GENERAL CORP | 10-49 | 43 3/4 | -3/4 | -7.8 | |
| N | DATAPoint CORP | 11-36 | 20 5/8 | -1 7/8 | -8.3 | |
| N | DIGITAL EQUIPMENT | 62-132 | 85 7/8 | -5 1/8 | -5.6 | |
| A | ECCO INC | 6-16 | 14 1/4 | +1/8 | +0.8 | |
| N | ELECTRONIC ASSOC. | 5-15 | 5 1/4 | -3/4 | -12.5 | |
| N | FLOATING POINT SYST | 13-44 | 18 1/8 | +5/8 | +4.0 | |
| N | FOXBORO | 22-47 | 30 1/2 | -1 3/4 | -5.4 | |
| O | GENERAL AUTOMATION | 3-16 | 9 | -1/2 | -5.2 | |
| N | GOULD INC | 24-44 | 25 1/8 | -2 1/8 | -7.7 | |
| N | HARRIS CORP | 20-51 | 26 7/8 | -1 1/8 | -4.0 | |
| N | HEWLETT-PACKARD CO | 22-48 | 34 3/4 | -3/8 | -1.0 | |
| N | HONEYWELL INC | 28-69 | 49 5/8 | -7/8 | -1.7 | |
| N | IBM | 57-134 | 104 3/8 | -1 3/8 | -1.3 | |
| O | IPL SYSTEMS INC | 4-14 | 5 | -1/4 | -4.7 | |
| N | M/A-COM INC | 13-35 | 17 7/8 | +3/8 | +2.1 | |
| N | MANAGEMENT ASSIST | 7-26 | 23 3/4 | +1 | +4.3 | |
| N | MATHEMATICA ELEC (ADR) | 47-88 | 72 3/4 | -2 | -2.6 | |
| N | MODULAR COMPUTER SYS | 8-16 | 6 7/8 | -1/8 | -1.7 | |
| N | NOVARK DATA SCI | 9-18 | 9 3/8 | +3/8 | +7.1 | |
| N | NOTODULA INC | 11-49 | 31 7/8 | -2 1/2 | -7.2 | |
| N | NAT'L SEMICONDUCTOR | 12-60 | 12 1/8 | +1/8 | +1.0 | |
| N | NBI INC | 17-51 | 19 7/8 | -1 5/8 | -7.5 | |
| N | NCR | 10-34 | 24 3/4 | -7/8 | -3.4 | |
| N | PERKIN-ELMER | 17-37 | 20 5/8 | -2 | -8.8 | |
| N | PRIME COMPUTER INC | 11-30 | 12 | -1 1/2 | -11.1 | |
| N | SPERRY | 21-50 | 37 1/2 | -3/8 | -0.9 | |
| O | TANDY COMPUTERS INC | 14-40 | 22 1/2 | +3/4 | +3.5 | |
| N | TANDY CORP | 25-65 | 27 5/8 | +3/4 | +2.7 | |
| O | TELEVIDEO SYSTEMS | 6-41 | 5 7/8 | -1 1/8 | -16.0 | |
| O | TELXON CORP | 8-16 | 11 | +3/4 | +7.3 | |
| N | TEXAS INSTRUMENTS | 71-176 | 128 3/4 | -4 3/4 | -3.5 | |
| A | ULTIMATE CORP | 8-24 | 18 | -1/2 | -2.7 | |
| O | VECTOR GRAPHICS INC | 1-14 | 5/8 | -1/4 | -31.1 | |
| A | WANG LABS "B" | 13-42 | 26 | 0 | 0.0 | |
| A | WANG LABS "C" | 11-42 | 28 | -1/2 | -1.8 | |
| N | XEROX CORP | 35-52 | 38 1/2 | -1 3/8 | -3.6 | |
| LEASING COMPANIES | | | | | | |
| O | BOOTH FINANCIAL CP | 8-21 | 19 1/2 | 0 | 0.0 | |
| N | COMDISCO INC | 7-42 | 12 1/8 | +3/8 | +3.1 | |
| O | CONTINENTAL INFO SYS | 3-16 | 8 1/8 | -3/8 | -5.7 | |
| N | OFF INC | 5-15 | 11 1/2 | -5/8 | -5.1 | |
| O | PHOENIX AMERICAN INC | 6-17 | 6 | -1/4 | -4.0 | |
| O | SELECTERM INC | 11-21 | 14 | -1/2 | -3.4 | |
| N | U.S. LEASING | 18-47 | 31 3/4 | -1/2 | -1.5 | |
| COMPONENTS | | | | | | |
| N | ADVANCED MICRO DEV | 13-37 | 30 3/4 | -2 1/4 | -6.8 | |
| O | ADV'D SEMICONDUCTOR | 12-38 | 20 3/4 | -1 1/4 | -5.6 | |
| N | ANALOG DEVICES INC | 14-32 | 23 3/8 | +3/8 | +1.6 | |
| N | ANALOGIC CORP | 14-27 | 13 5/8 | -7/8 | -6.0 | |
| N | APPLIED MAGNETICS CP | 12-37 | 12 5/8 | -1 1/8 | -8.1 | |
| N | TERADYNE | 14-38 | 27 | -1 | -3.5 | |
| SOFTWARE & EDP SERVICES | | | | | | |
| O | ADVANCED COMP TECH | 1-8 | 2 3/4 | +1/8 | +4.7 | |
| O | ADVANCEO SYSTEMS INC | 6-22 | 14 7/8 | -1/4 | -1.6 | |
| O | AGS COMPUTERS INC | 7-32 | 17 3/4 | 0 | 0.0 | |
| O | AMERICAN SOFTWARE | 13-31 | 13 | -1/2 | -3.7 | |
| N | ANACORP INC | 2-23 | 3 1/8 | -1/2 | -13.7 | |
| O | ANALYSTS INTL CORP | 5-20 | 5 | 0 | 0.0 | |
| A | APPLIED DATA RES. | 8-37 | 19 1/4 | -3/4 | -3.7 | |
| O | ASK COMPUTER SYSTEMS | 6-21 | 15 1/2 | +1 1/4 | +8.7 | |
| B | ASTRODYNE COMP INC | 1-7 | 1 1/4 | 0 | 0.0 | |
| N | AUTOMATIC DATA PROC | 21-44 | 33 1/4 | -3/4 | -2.2 | |
| O | CGA COMPUTER ASSOC | 5-17 | 11 7/8 | +2 3/8 | +25.0 | |
| O | COMPUTER ASSOC INT'L | 6-35 | 16 1/2 | -1/2 | -2.9 | |
| O | COMPUTER HORIZONS | 8-20 | 9 3/4 | -1/4 | -2.5 | |
| O | COMPUTER NETWORK | 4-10 | 5 | -3/8 | -6.9 | |
| N | COMPUTER SCIENCES | 11-23 | 12 1/2 | 0 | 0.0 | |
| O | COMPUTER TASK GROUP | 8-22 | 13 3/4 | 0 | 0.0 | |
| O | COMPUTER USAGE | 2-22 | 6 1/2 | 0 | 0.0 | |
| O | COMPUTONE SYSTEMS | 4-38 | 5 | -1/8 | -2.4 | |
| O | CONSERV CORP | 2-20 | 2 3/8 | -5/8 | -20.8 | |
| O | COMSHARE | 7-14 | 7 3/4 | 0 | 0.0 | |
| N | CULLINET SOFTWARE | 12-50 | 33 7/8 | +1 3/8 | +4.2 | |
| O | CYCLAR SYSTEMS INC | 9-27 | 17 1/4 | +1/4 | +1.4 | |
| N | ELECTRONIC DATA SYST | 10-42 | 34 1/2 | -3 1/2 | -9.2 | |
| O | HOGAN SYSTEM INC | 12-27 | 12 3/4 | -1/4 | -1.9 | |
| N | GENERAL ELECTRIC CO | 45-59 | 53 | -1/4 | -0.4 | |
| N | GTE CORP | 36-48 | 37 1/8 | +1/4 | +0.6 | |
| N | INFORMATICS INC | 10-34 | 21 1/2 | 0 | 0.0 | |
| O | INFORMATION SCIENCE | 5-17 | 4 1/2 | -2 | -30.7 | |
| O | INFOTRON SYSTEMS COR | 25-43 | 26 3/4 | -2 | -6.9 | |
| O | KEANE ASSOCIATES | 4-15 | 9 3/4 | 0 | 0.0 | |
| A | LOGICOM | 8-31 | 21 7/8 | +1 1/8 | +5.4 | |
| O | MCI COMMUNICATIONS | 8-34 | 7 7/8 | -1/8 | -1.5 | |
| O | MGT SCI AMER INC | 8-33 | 18 | -1 | -5.2 | |
| O | MATHEMATICAL APP GRP | 7-22 | 7 1/2 | 0 | 0.0 | |
| O | MICOM SYSTEMS INC | 23-50 | 39 | -1 | -2.5 | |
| O | MONCHIK-WEBER CP | 6-22 | 6 3/8 | -7/8 | -12.0 | |
| O | NATIONAL DATA CORP | 5-26 | 15 | -3/4 | -4.7 | |
| O | ON-LINE SOFTWARE INT | 8-27 | 8 1/4 | -3/4 | -8.3 | |
| O | PANSONIC SYSTEMS | 8-30 | 14 3/8 | -1/8 | -0.8 | |
| N | PLANNING RESEARCH | 6-21 | 15 | -1/4 | -1.6 | |
| O | POLICY MGMT SYST CP | 15-35 | 25 3/4 | 0 | 0.0 | |
| O | PROGRAMING & SYS | 1-8 | 4 5/8 | -1/4 | -5.1 | |
| O | REYNOLDS & REYNOLD | 17-53 | 29 1/4 | -1 1/2 | -4.8 | |
| O | SEI CORP | 11-34 | 14 1/4 | -1/2 | -3.3 | |
| O | SHARED MEDICAL BYST | 13-43 | 28 3/8 | -5/8 | -2.1 | |
| O | SCIENTIFIC COMPUTERS | 8-14 | 7 3/4 | 0 | 0.0 | |
| O | SOFTWARE AD | 5-17 | 10 3/8 | +1/8 | +1.2 | |
| A | URS CORP | 5-18 | 10 7/8 | -5/8 | -5.4 | |
| N | WYLY CORP | 7-17 | 9 | -1/8 | -1.3 | |
| PERIPHERALS & SUBSYSTEMS | | | | | | |
| P | AM INTERNATIONAL | 2-7 | 3 1/4 | -1/8 | -3.7 | |
| A | ANDERSON JACOBSON | 7-28 | 8 5/8 | -3/4 | -8.0 | |
| O | AUTO-TROL TECHNOLOGY | 8-28 | 15 | -1 1/4 | -7.5 | |
| O | BANCTEC INC | 7-33 | 7 3/4 | +3/4 | +10.7 | |
| A | BEHEIVE INT'L | 2-35 | 3 1/8 | 0 | 0.0 | |
| N | BOLT-BERANEK & NEW | 5-30 | 19 1/4 | 0 | 0.0 | |
| O | CAMBEX CORP | 1-4 | 1 1/4 | 0 | 0.0 | |
| N | CENTRONICS DATA COMP | 8-28 | 10 | -1/8 | -1.2 | |
| A | CETEC CORP | 4-12 | 8 1/4 | +3/8 | +4.7 | |
| O | COGNITRONICS | 2-20 | 5 3/4 | 0 | 0.0 | |
| SUPPLIES & ACCESSORIES | | | | | | |
| N | AMERICAN BUS PRODS | 7-23 | 20 1/4 | 0 | 0.0 | |
| N | BARRY WRIGHT | 13-33 | 26 | +5/8 | +2.4 | |
| A | DUPLEX PRODUCTS INC | 12-27 | 23 1/8 | +1/8 | +0.5 | |
| N | ENNIS BUS. FORMS | 6-28 | 21 1/4 | +1/4 | +1.1 | |
| N | JM COMPANY | 48-80 | 75 | -1 1/2 | -1.9 | |
| N | MOORE CORP LTD | 26-51 | 37 1/8 | -1/8 | -0.3 | |
| O | STANDARD REGISTER | 11-35 | 34 1/4 | +1/4 | +0.7 | |
| N | WALLACE COMP SERVICE | 11-33 | 26 1/8 | +5/8 | +2.4 | |

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